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The AIRCRAFT ENGINEER AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1933.
Jan. 16. R.Ae.S. Informal Discussion at 18, John Street, Adelphi.
Jan. 24. Lancs.Ae.C. Ball, Midland Hotel, Manchester.
Jan. 26. "Human Limits in Flying." Lecture by Wing-Com. G. S. Marshall before R.Ae.S.
Jan. 26-28. Forest Gate Aviation Show.
Jan. 31. "Detonation." Lecture by F. R. B. King before R.Ae.S., Students' Section. Chairman, H. T. Tizard.
Feb. 1. Entries close for the Deutsche de la Meurthe Cup (Aero Club de France).
Feb. 2. "Operation of Aircraft Over Tropical Routes." Lecture by A. Plesman before R.Ae.S.
Feb. 3. Cinque Ports Flying Club Annual Dinner and Dance at Rl. Pavilion Hotel, Folkestone.
Feb. 8. "Recent Operations in Kurdistan." Lecture by Group-Capt. A. G. R. Garrod before R.U.S.I.
Feb. 8. Herts and Essex Ae.C. Annual Dinner and Dance, Wharncliffe Rooms, Hotel Gt. Central, London.
Feb. 10. Viceroy's Challenge Trophy Race, Delhi.
Feb. 13. "A Review of Air Transport." Lecture by G. E. Woods Humphery before Inst. of Transport.
Feb. 16. "Cloud Formation." Lecture by Sir Gilbert Walker before R.Ae.S.
Mar. 3. No. 25 (F.) Sqd., R.A.F., Re-union Dinner at May Fair Hotel. (Postponed from Jan. 6.)
Mar. 9. "Engine Cooling Research." Lecture by R. McKinnon Wood before R.Ae.S.
Mar. 23. "Seaplane Research." Lecture by H. M. Garner before R.Ae.S.
Mar. 24. Bristol and Wessex Ae.C. Dance at Grand Spa Hotel.
Mar. 29. "The East African Dependencies." Lecture by H. F. Melland before R.U.S.I. Chairman, Air Vice-Marshal Sir V. Vyvyan.
May 10. Kent Air Pageant and Opening of Maidstone Aerodrome.
June 5. Lincs. Ae.C. Air Pageant and Opening of Aerodrome at Holton-le-Clay, Grimsby.
June 24. Royal Air Force Display, Hendon.

EDITORIAL COMMENT

WHEN a Government Department raises the plea of Economy, it surrounds itself with a zareba of pricks against which it is very difficult to kick. Unpleasant buff papers are now being distributed by the post to the luckless taxpayers, and a scrutiny of the contents is usually enough to make any recipient cry aloud for more Government economy. Everyone knows, or at least should know, that there are some forms of refraining from expenditure which in the end work out as reckless extravagance, and even in times of stress there is no economy in refraining from a profitable investment; but when a Government Department says that an innovation, even a desirable one, would cost a lot of money, most of us think of those buff demand forms and drop the discussion. Once the times really begin to improve, there are any amount of innovations which we should like to see put into operation, and not least among them is a wide extension of night flying along air mail routes. To postpone an improvement is not necessarily to abandon it.

Air Mail Services

The London Chamber of Commerce has been engaging in a long discussion with the General Post Office on the subject of air mails, and some of the observations of the Chamber appear in our section about Air Transport on another page. The Chamber's suggestions for accelerating the carriage of air mails has found the G.P.O. strongly entrenched in the afore-mentioned zareba. The Chamber pointed out that the Post Office pays for special mail trains, and therefore ought to pay for special mail air services. The G.P.O. replies that it can afford to pay for the former but cannot afford to pay the greater cost of the latter. All of us air-minded people would dearly like to indulge in a little vigorous kicking by way of reply—but that zareba is too prickly for us. When the buff forms grow a trifle less exorbitant we shall consider the purchase of a pair of football boots.

The Chamber goes on to remark that, creditable as is the present record of the air mail to India, the mail is now carried by train from Paris to Brindisi,

and there is room for improvement on that stretch of the route. We agree that there is. The ideal thing would be for the mails to be flown through to Brindisi in a day, some 1,200 miles, and when air mails are properly organised that will, no doubt, be done. As we have often pointed out, the mails are held back by the combination of passengers and mails in one aeroplane. The pace of an air service on this combined method must be the pace of the slowest, like the pace of an army, and in this case the passengers are the slowest. We certainly look for an improvement when special mail-planes are in use; but then, again, the question will arise of who is to pay for them until they can pay for themselves. Imperial Airways have already pleaded their duty to the taxpayers, which is to make their services self-supporting as soon as possible, and so to refrain from any enterprise which would be likely to prove unremunerative. This argument is another zareba. In time, and in no long time, we believe that the demand of the commercial community of the world for really fast air mails will become so insistent that the Post Offices of civilised nations will find it impossible to resist that demand; and when that comes about it may well be that fast air mails will prove as profitable as did Sir Rowland Hill's much-regretted inland penny post. At any rate, if the air mails do not pay directly, they will almost certainly pay indirectly by stimulating commerce to such an extent that we shall all be better off.

As for the air mail to India, that will only achieve its greatest use and popularity when the internal distribution of letters in India is also made by air. In our Air Transport section we publish some complaints from the famous Lahore paper, *The Civil and Military Gazette*, which stress the importance of good internal distribution. The Tata service from Karachi to Bombay and Madras must already be producing an effect by supplying two of the provincial capitals of India with rapid deliveries, but Calcutta, the most important commercial city in India, is still not catered for by air.

When the London Chamber of Commerce pleaded for a minimum weight of a quarter-ounce instead of a half-ounce, the G.P.O. fell back on its experience, and said that this would be likely to lead to a loss in operation and a check on the growth of the weight of mail carried. That is another sort of zareba, but one which is equally prickly. Presumably it means that private correspondence does not at present amount to much, and that only business letters need be considered. The firms which now send half-ounce letters and pay 6d. for half an ounce, would still send the same number of letters but would mostly keep them down to a quarter of an ounce each and pay 4d. for each. That would certainly mean a loss in takings and in weight carried, and the carrying firm, Imperial Airways, would have a grievance in the reduction of weight entrusted to them. The G.P.O. is in the best position to know the probabilities, and the layman can hardly argue with them on such a point. The air postcard which was introduced last year seems to us a useful compromise which should be appreciated by private correspondents who do not want to pay as much as 6d. and who do not need to write as much as would weigh half an ounce.

Apparently, while the entire community is hard up, we must submit to fall short of the ideal in the matter of air mails.

"Civil Aviation is Different"

The informal discussion to be held by the Royal Aeronautical Society (with which is incorporated the Institution of Aeronautical Engineers) on Monday of next week is the first tangible result of the agitation begun by FLIGHT in our Editorial Comment on October 20, 1932, on the subject of Government regulations of private flying, and the Society is to be congratulated on having taken the initiative. Actually, all the bodies concerned with civil aviation in Great Britain are very directly concerned with the matter, and we feel sure that there will be a record attendance at the theatre of the Royal Society of Arts. In fact, we fear that the room will be quite inadequate to accommodate all those who will wish to be present. There is no denying that the subject of the present state of civil aviation is giving the very gravest anxiety to all who have more than a superficial knowledge of the harmful effects which the present system is having upon the sound and unhampered development of private flying, and the motion to be proposed is, if somewhat ambiguous, at any rate commendably wide in scope. It is: "Civil Aviation differs from Military Aviation, and should be treated accordingly." It also differs from breeding of pedigree pigs and deep-sea cod fishing, and in fact from quite a lot of other things one could think of. The phrase is quaint, but will serve quite as well as any other as a basis for the discussion. At least it shares its comprehensiveness with the title for a sermon chosen by the young vicar, who proposed to speak to his flock on "Man, and his relation with God, in the past, present and future."

But in all seriousness, the informal discussion cannot do any harm even if it does no good. At the present time almost everyone is agreed that the existing system is definitely unsatisfactory, and that "something must be done." When, however, it comes to saying what should be done to put matters right, hardly two people think alike. Some think that a little gentle pressure should be put on the Air Ministry, so as to get some of the more onerous regulations removed or amended. Others (we among them) see no prospects for any real improvement unless the whole subject of civil flying is taken right away from the Air Ministry. In spite of repeated promises from that quarter, nothing of real assistance has materialised. As fast as one regulation was lopped off at one end, three new ones were added at the other. If we are to hope to do any good it will be necessary to uproot the tree and to plant a new one of a different stock altogether. That in abolishing the Civil Aviation Directorate some very estimable and valuable officials would find themselves without jobs is regrettable, but one cannot make omelettes without breaking eggs, and anyway once civil flying had managed to break away and become established on a new footing, progress would be so rapid that such officials as are really capable could easily be absorbed in ordinary civilian aviation capacities.

If the informal discussion is to exhaust the subject, it will probably still be proceeding when we go to press with next week's issue of FLIGHT, and we will then let our readers know how it is progressing, and if possible we will record the names of those who by then have starved to death or died from exhaustion.

The cable deck of H.M.S. *Courageous* now situated below the lower flying-off deck, as it looks on a rough day.

H.M.S. COURAGEOUS

The Flagship of our Aircraft Carriers

"Courageux et Fougueux"

Laid down in January, 1915, the* Courageous *together with her sister ship the* Glorious, *was a child of Lord Fisher who visualised the need for very fast, very large cruisers, mounting guns of the heaviest calibre. Post-war conditions, however, did not admit of a need for the type, with the result that in 1924 conversion was started and both ships became aircraft carriers

LORD FISHER was a man of vision, and it is due to his foresight that we have aircraft carriers like the *Courageous* and *Glorious*. In 1912 he wrote: "Sea fighting is pure common sense. The first of all its necessities is SPEED, so as to be able to fight:—

When you like,
Where you like,
and How you like."*

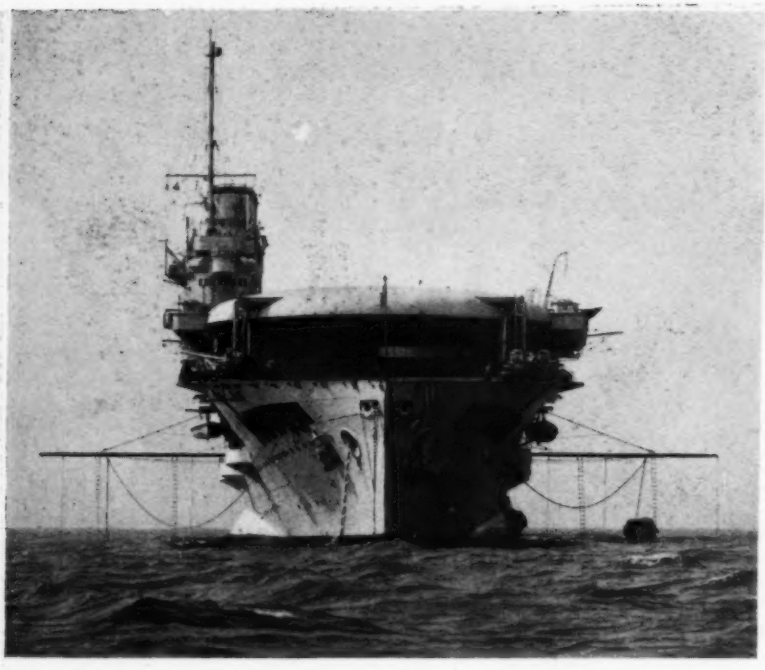
To these sentiments he was later able to give full rein (Lord Fisher himself might perhaps have spelt it reign), for, on October 31, 1914, after the outbreak of War, he became First Sea Lord in succession to Prince Louis of Battenberg, who, to the lasting regret of everyone who knew him, felt forced to resign on grounds of parentage. In connection with this loss to the Royal Navy it is worth quoting of an occasion when he visited Kiel with King Edward. A German Admiral in high command reproached him with serving in the British Fleet, whereat Prince Louis, stiffening, replied: "Sir, when I joined the Royal Navy, in the year 1868, the German Empire did not exist."†

Lord Fisher worked, together with Mr. Winston Churchill (First Lord of the Admiralty), in creating, as rapidly as possible, what was virtually a new Navy, and in January, 1915, the order for the *Courageous* was placed with Armstrongs. She was to have thin armour protection and a speed of not less than 32 knots. Her main armament was to be four 15 in. guns in two turrets, one forward and one aft, with a secondary armament of eighteen 4 in. guns in six triple mountings. The armour to consist of 2 in. protected plating on top of 1 in. shell plating, while a modified bulge, as protection against torpedo attack, was arranged for.

The main machinery consisted of a 4-shaft geared turbine arrangement driving the propeller shafts through double helical gearing. Eighteen boilers of the Yarrow small-tube type were fitted, giving a h.p. of some 90,000. She was launched on February 5, 1916, and commissioned on November 4 of the same year as Flagship of the 3rd Light Cruiser Squadron flying the flag of Rear Admiral T. D. W. Napier, with Capt. A. Bromley, R.N., as Flag. Capt. In August, 1917, this squadron was reconstituted, and the *Courageous*, together with the *Glorious* and *Furious*, formed the 1st Cruiser Squadron, operating with the Battle Cruiser Force, Admiral Napier being promoted and becoming Vice-Admiral of the Light Cruiser Force.

Anyone who served in the North Sea knows that the chances of action with the enemy were few and far between; it is not surprising, therefore, to find that, as

* The World Crisis, 1911-1914. W. S. Churchill, p. 140.
† *Ibid.*, p. 90.



A bow view of a sister ship of the *Courageous* showing clearly the rounded front end of the main flying deck, which smooths the air flow over the deck, thus assisting the aircraft taking off. (FLIGHT *Photo.*)

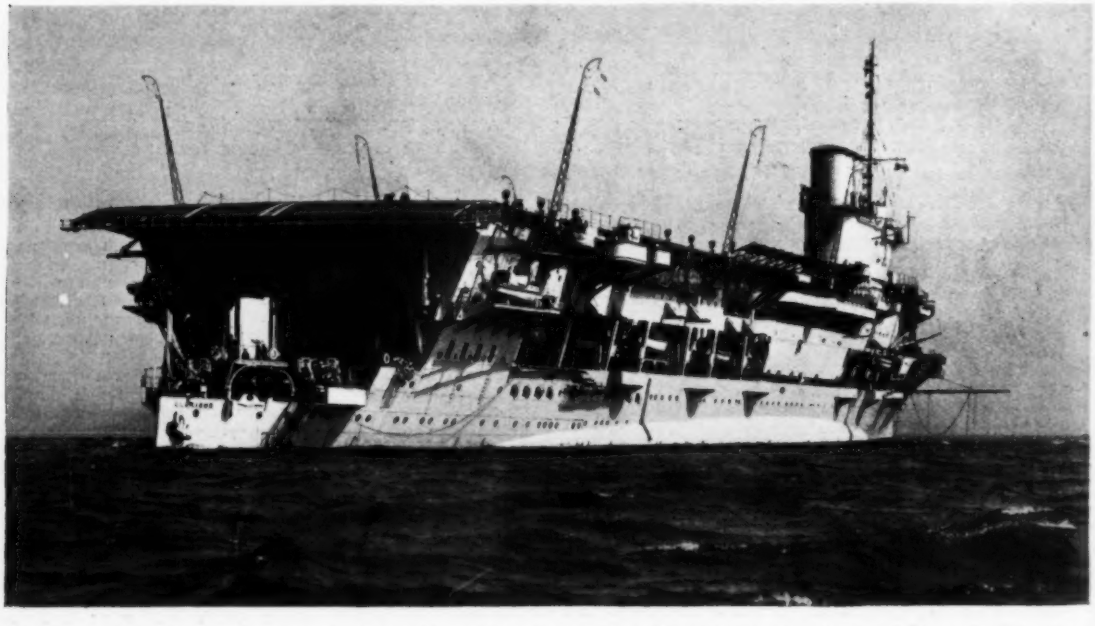
far as is ascertainable, the *Courageous* was only in one fight, and that was on November 17, 1917, when she opened fire on enemy light cruisers and a submarine, but these escaped behind a smoke screen.

The foregoing will serve to give the reader some idea of her conception, birth and the part she played in the war. It is, however, with her as an aircraft carrier that we are most concerned, although the conversion did not take place until after hostilities had ceased. The *Furious*, in many respects very like the *Courageous*, was stripped of her major armament and fitted with a flying-on deck for aircraft during 1917, and her success justified the furtherance of the type.

In 1919 the *Courageous*, after being reduced to Reserve, became the Turret Drill Ship at Portsmouth, and was regarded as a permanent ship of the Reserve Fleet, in which boys were borne to complete their training. While acting in this capacity and before she was finally paid off in June, 1924, she flew successively, the flags of Rear Admirals, C. C. Fowler, C. Greatorex and E. H. Parker, and Vice-Admirals Sir Douglas Nicholson and Sir William Goodenough.

She then became a source of work for the men of Devonport Dockyard, and between then and 1928 was converted to an aircraft carrier. Her turrets were taken out, as well as her mast and funnels. With these went the bridge and everything on the upper and boat decks. The centre of the ship had to be completely remodelled. The first great alteration was moving the funnel to the starboard side instead of being on the centre-line. Then an enormous hangar was built, its "floor" being roughly level with what used to be the upper deck; above this yet another hangar was built, and above that again extended the flying-on deck. The funnel, together with the bridge, was built on the starboard side of this deck, the width of which is ample for flying-on aircraft, even those the size of Fairey III F's, whether they land abreast of the "island" or not.

At the forward and after ends of the flying-on deck there are large lifts, which carry the aircraft down to or up from the two hangars, and they are of such a size that the aircraft may be taken below without waiting to fold



Another view of the *Courageous'* sister ship which shows the after entrance to the lower hangar and also the bulges on the water line giving protection against torpedo attacks. (FLIGHT *Photo.*)

An "Osprey" ("Kestrel") of 404 Flight waiting her turn to fly on. (FLIGHT *Photo.*)

their wings, thus shortening the time before it is safe to fly-on the next machine. Speed both in flying on and off is, of course, essential, so everything that can be done to shorten these times is very carefully organised.

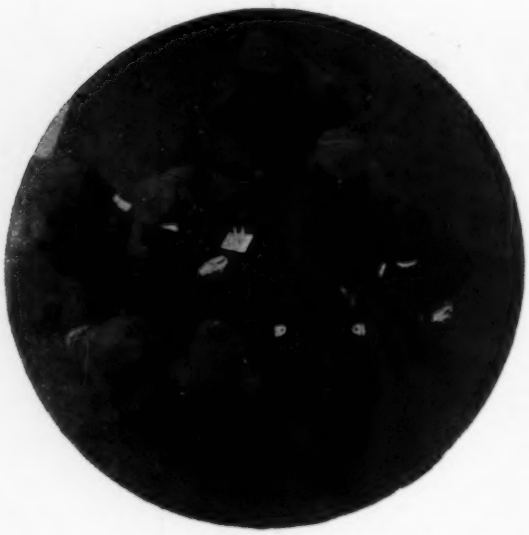
The deck of the upper hangar extends forward over the cable deck, or what used to be the foc'sle before the conversion, and this forms the lower flying deck. From there it is possible to fly off the Fleet Fighters and lighter types of aircraft, but they cannot, of course, be landed thereon.

On February 21, 1928, all these vast alterations were completed, and the *Courageous* was first commissioned for independent service in the Mediterranean as an aircraft carrier, under Capt. A. Lambert, R.N.

She carried six flights of aircraft, each of six machines. These were Nos. 404 and 407, both Fleet Fighter Flights with Fairey "Flycatchers" ("Jaguar IV" engines). Nos. 445 and 446 Fleet Spotter Reconnaissance Flights with Fairey III F's ("Lion XIa" engines), and 463 and 464 Fleet Torpedo Bomber Flights with Blackburn "Darts" ("Lion V" engines).

With Wing Com. R. Leckie, R.A.F., in charge of flying, she left for Gibraltar on June 28, and carried out a cruise in the Mediterranean, visiting among other ports those of Malta, Argostoli, Cattaro, Spalato, Sebenico, Zara, Venice and Taranto, arriving back in Malta on October 30. After this she took part in combined Fleet exercises with the Atlantic Fleet, and in March left Gibraltar for a cruise on her own back to Malta. On April 15, 1929, Capt. H. J. S. Brownrigg, R.N., relieved Capt. Lambert, and on June 26 the ship left Malta for a summer cruise, during which she visited Patras, Dragomesti, Skiathos, Athens, and finally arrived back at Malta. On August 2 Wing Com. R. Collishaw, R.A.F., relieved Wing Com. Leckie, and

At 30 knots the *Courageous* throws up a very impressive wake, particularly when turning. (FLIGHT *Photo.*)



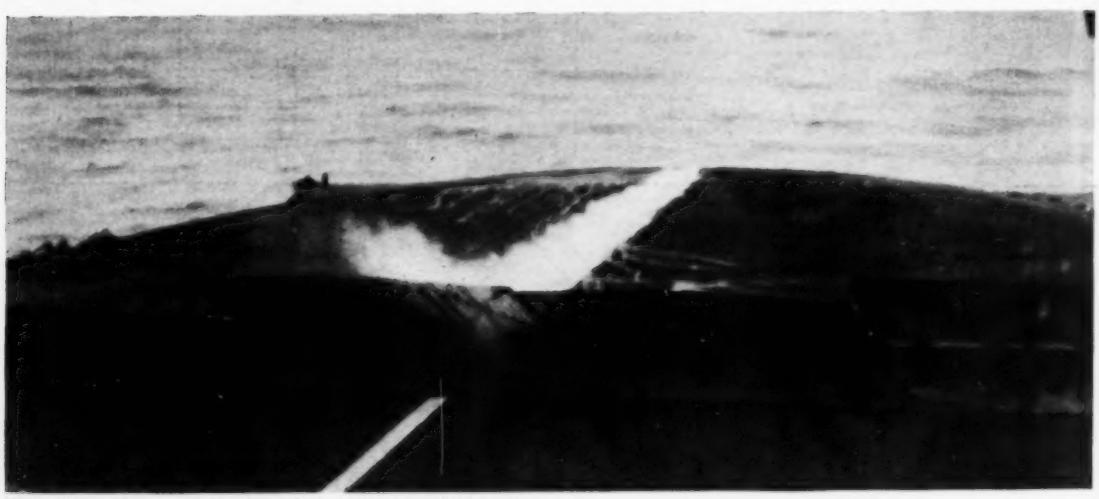
Pilots, on board for flying-on training receiving final instructions before making their first deck landings.

a cruise in home waters, visiting Invergordon and Portland, she left Portsmouth on January 24, 1931, for that year's Spring Cruise from Gibraltar. This interlude finished at Portsmouth on March 31, and there she remained until the end of April. The remainder of the year was spent with the usual routine exercises and cruises, winding up with a short refit at Portsmouth.

During these two years there were three major changes in command. On May 9, 1930, Capt. A. H. Norman, R.N., relieved Capt. Brownrigg, and on December 17 of the same year Capt. C. V. Robinson, R.N., relieved Capt. Norman. On September 21 of the following year, 1931, an event of still greater importance in the ship's history was the formation of the aircraft carriers as a separate command under Rear Admiral R. G. H. Henderson, who hoisted his flag in the *Courageous*, Capt. Robinson becoming at the same time Flag Capt. as well as Capt. of the ship. Admiral Henderson was by no means new to carrier work, as he had been Capt. of the *Furious* from September 1, 1926, to April 23, 1928, before his promotion. This new command will be watched with interest, particularly where the carriers are able to operate together during manœuvres and Fleet exercises.

During 1930 the complement of aircraft carried was increased by the addition of one flight of Fleet Fighters, No. 401, with Fairey "Flycatchers" ("Jaguar IV"), and two flights of Fleet Spotter-Reconnaisance machines, Nos. 449 and 450, with Fairey III F's ("Lion XIa").

During the following year the *Courageous* travelled far.



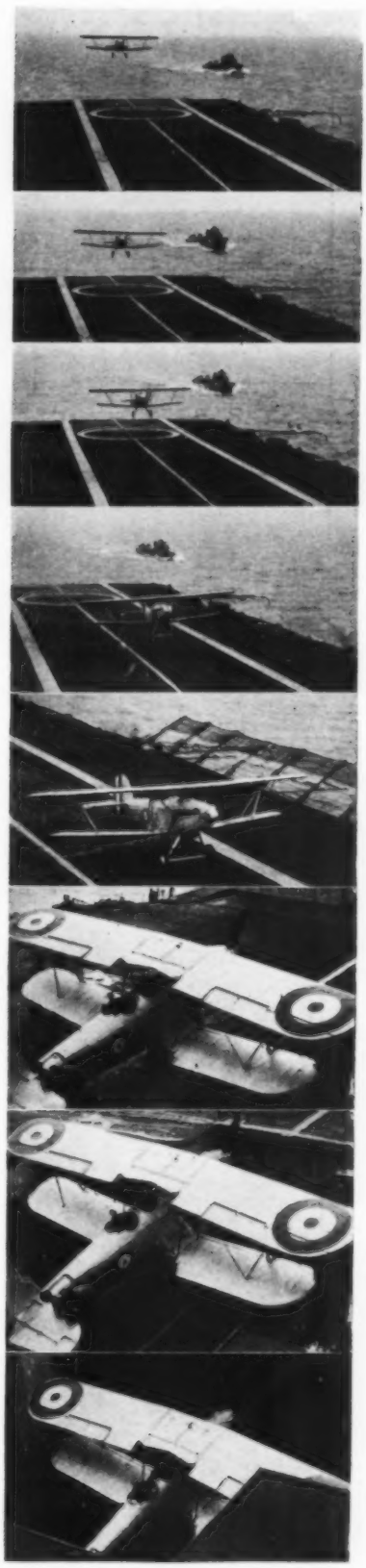
This shows the steam jet by which it is ensured that the ship is steaming directly into wind when taking off. It will also be seen that "the wind break" is just being raised into position as an aircraft is going down the forward lift to the hangar below. (FLIGHT *Photos.*)

shortly afterwards, on the 26th, disturbances in Palestine called for the presence of British ships, so among others the *Courageous* was sent to Jaffa, where she remained until September 27. When she arrived she landed 404 Flight, which subsequently did a large amount of flying ashore. They first visited Ramleh and then many other aerodromes, including Gaza, Beersheba, and Samakh. The situation called, a little later, for a rather more impressive looking demonstration on the part of British Authority, so all the remainder of the *Courageous'* aircraft were landed at Gaza. On their way ashore they flew over Jerusalem, and this apparently had the desired effect. During their stay, that is until they finally left Jaffa on September 27, they made many patrols throughout the length and breadth of Palestine, and their presence would seem to have restored law and order in a quick and economical manner.

After leaving Jaffa the ship returned to Malta, visiting Alexandria, Constantinople and Corfu on the way, and arriving on November 1.

The next few months were spent in Malta, and it was not until the end of January, 1930, that the *Courageous* left to join the Atlantic Fleet. Her first commission (3 years) as an aircraft carrier was nearing completion, and in due course she paid off at Devonport for refitting. In September of the same year she recommissioned, and, after

Capt. F. Elliott, R.N., standing behind Wing. Com. L. H. Slatter and talking to Sqd. Ldr. A. Durston.



A pupil finishing his first deck landing on an Avro 504N ("Lynx"). These lightly-loaded aircraft have greatly assisted pilots' training.

The series on the right shows an "Osprey," landing on and subsequently descending to the hangar by the forward lift.

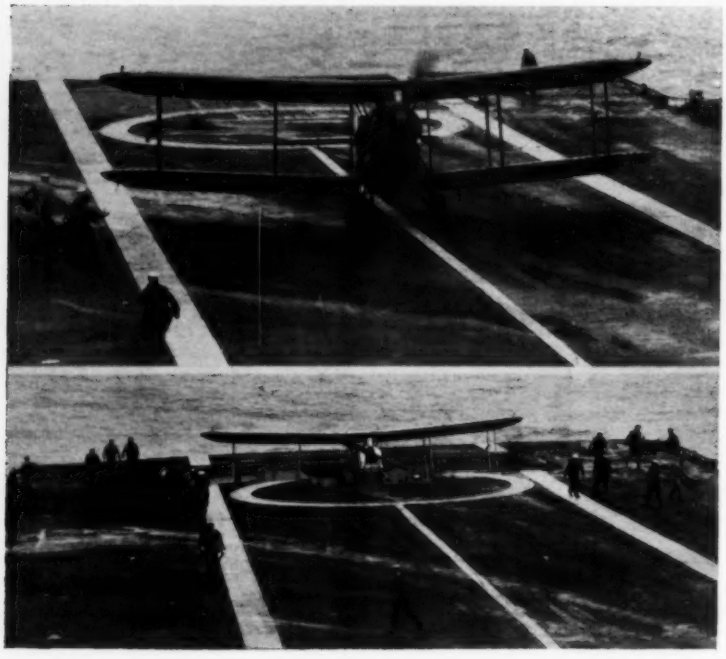
(FLIGHT *Photos.*)

On January 12, 1932, she left for Gibraltar and the Annual Spring Cruise, arriving back at Portsmouth on March 13, 1932, after having visited Malta, Vatika Bay, Gibraltar, and Lisbon. She did not stay long at Portsmouth, however, for she left on April 26 for a cruise at home, to Loch Erriboll, Scapa Flow, Larne and Torbay, finishing at Portsmouth on June 29. Next came a great event, the Review off Portland by His Majesty the King. The *Courageous* was honoured during this time by being chosen to show how our Fleet Air Arm operates, and for this purpose a special "grandstand" was built abaft the funnel on the level of the flying bridge, from which the King was able to view the flying and on and off.

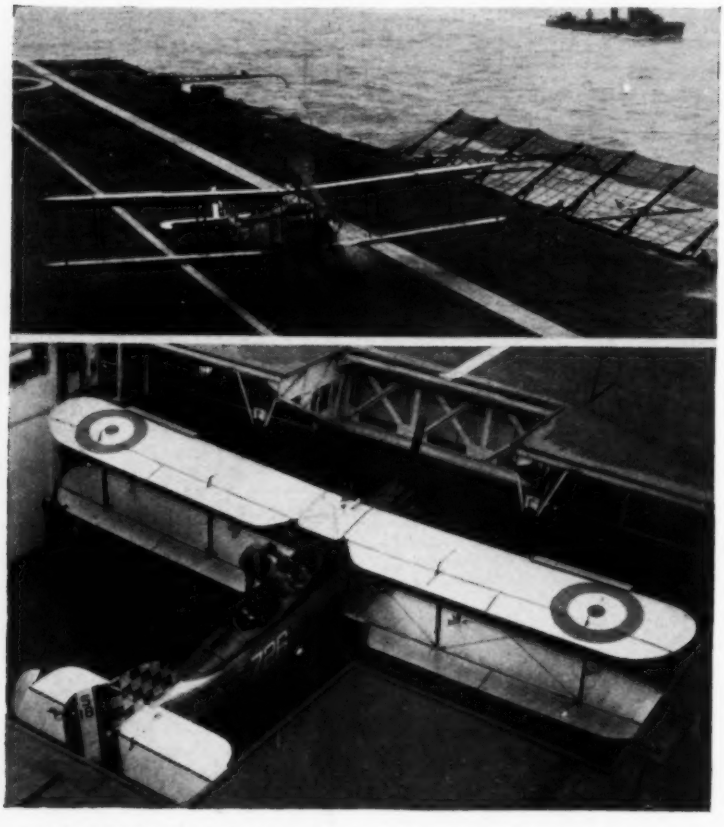
In April the flights had been rearranged slightly. 407 was replaced by 402, a Fleet Fighter Flight, with the same aircraft, while 449, a III F flight, was no longer carried. A change in the Wing Commander was also made, when Wing Com. L. H. Slatter took over from Wing Com. Collishaw at the end of August.

After the Review the *Courageous* once more made a short cruise to the North, visiting Rosyth and Banff before returning to Portsmouth for a refit.

This was completed shortly after Christmas, and at the beginning of this year we were fortunate in being able to witness the flying-on of the aircraft preparatory to the ship leaving once more for the annual Spring Cruise. The occasion was one of particular aeronautical interest in view of the re-equipment of some of the flights. The Reconnaisance and Torpedo Bomber Flights were retaining their III F's and "Darts" respectively, but 402 had now been given Hawker "Nimrods" and 404 "Nimrods" and "Ospreys"—3 of each. This is not the first time that "Nimrods" have been used in the Fleet Air Arm, as 408 flight has had them in the *Glorious* since January, 1932. It is, however, the first time the pilots in the *Courageous* have been able to fly behind the new Rolls-Royce "Kestrel" engines, and we gather that they are more than satisfied with them. After all, however efficient the aircraft may be, it is the engine which is of paramount importance when flying aircraft with land undercarriages, over the sea. The pilots of the Fleet Air Arm often have to fly their machines nearly to the limit of their endurance, over the water the whole time during patrols and exercises, and a reliable engine is naturally their first desire. Nowadays, with flotation gear, it does not necessarily mean that they would be in any very great danger should their engines fail (personally we should not choose that way of landing in shark-infested waters), but at least that aircraft would be put out of action pending complete overhaul should it come down during a patrol. "Kestrel" engines have a name for reliability second to none, but whereas in many forms of engineering reliability is usually obtained at the expense of power, in the "Kestrel"—and for that matter the whole of the Rolls-Royce range—reliability has been maintained despite an enormous increase of power, due in no small measure to the lessons learnt from their successful participation in the Schneider Trophy Contest. That



This Blackburn " Dart " (" Lion V ") was, it can be seen, sent below by the after lift after landing.



A Fairey IIIF (" Napier Lion XIA ") landing on and descending by the forward lift. The excellent finish of these F.A.A. machines, although they have been in service some time, should be noted. (FLIGHT *Photos.*)

" little extra something " is rather a hackneyed phrase at the present time, but in the " Kestrel " it really means " an extra something "! As our readers know, " Kestrel " engines are supercharged, but unlike many engines they have the advantage that the pilot can " go through the gate " in an emergency—that is, give the engine its full supercharge and hence maximum power—even at ground level for a few moments without wrecking the engine. This attribute gives pilots far greater scope and saves many from otherwise difficult situations. During the flying-on which we witnessed, one pilot had the, what can quite justifiably be called " bad luck "—for flying-on is still a business which requires not only a large amount of skill but also a modicum of luck—to over-shoot somewhat, and it looked as if he might roll over the forward end of the flying deck, but did he? No! " Through the gate " without a qualm he went, the " Kestrel " took it, and he left the deck again on veritable " sky-hooks." (Possibly his wine bill suffered before he exonerated himself to his brother pilots, and justified his excellent second landing!)

Joking apart though, all this does show that the " Kestrel " is an engine of engines. Not only has the period between top-overhauls been raised to some 500 hr., but it is an engine about which one never seems to hear the slightest quibbling. This is not the time nor place to enter into the controversy about air-cooled *versus* water-cooled—at least one nation in the world pins its faith to air-cooled engines—but it does seem the place to point out that Rolls-Royce engines have placed our single- and two-seater fighters not only at the head of the Air Arm of our Royal Navy, but also of our Royal Air Force and the Air Forces of other nations as well.

To get back to this flying-on business. We went down hoping to see some " fun." Did we? All we can say is that the Fleet Air Arm is too unvaryingly efficient. Aircraft after aircraft landed on with monotonous regularity. It wasn't a good day, the wind was gusty and the ship pitched quite a lot, but nothing seemed to worry our pilots. First of all twelve Blackburn " Darts " (" Lion XIa "), six of which were painted in the dark olive green of night flying machines.

DIMENSIONS AND ARMAMENT

H.M.S. COURAGEOUS

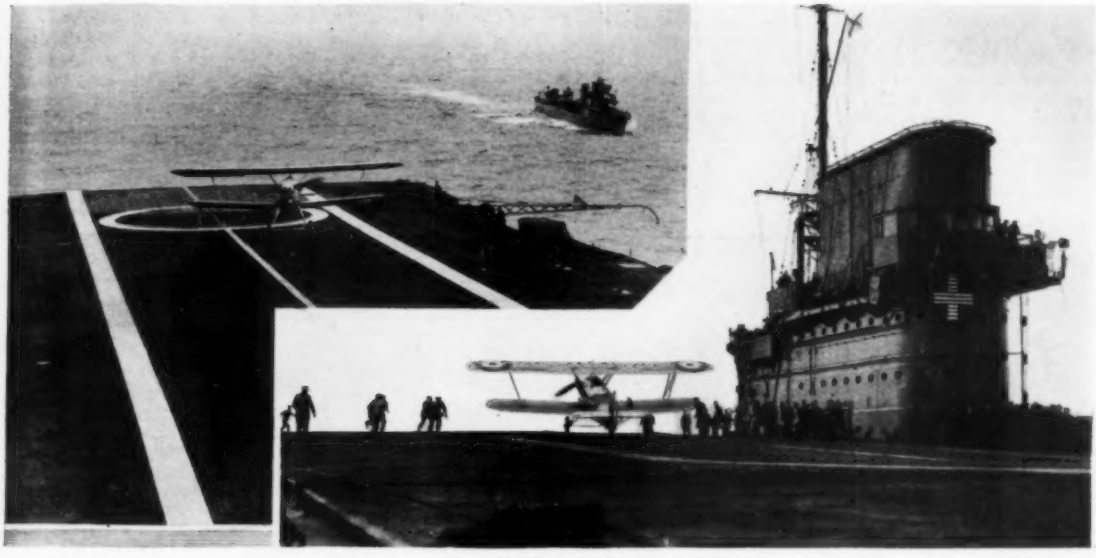
(before conversion to aircraft carrier)

Length overall	.. ..	786 *ft.* 3 *in.*
Breadth	.. .. ..	81 *ft.* 3 *in.*
Draught, mean	.. ..	22 *ft.* 3 *in.*
Displacement, tons	..	18,600
Shaft Horse Power	..	90,000
Oil fuel capacity, tons	..	3,250
Armament	.. ..	4 15-*in.*
		18 4-*in.*
		14 21-*in. Torpedo tubes.*

(As an aircraft carrier)

Displacement, tons	..	22,500
Beam, over blisters	..	90 *ft.* 6 *in.*
Beam over palisades	..	123 *ft.* 5 *in.*
Armament	.. ..	16 4·7 *in.*
		4 3-*pdr.*
		4 2-*pdr. pom poms.*

Complement, as aircraft carrier (approx.)—		
Officers and men	..	1,200



A " Nimrod " (" Kestrel ") Fleet Fighter landing on and taxying to the forward lift. The " island " forms a convenient grandstand and wind break for spectators. Above the automatic affirmative sign (half way up the funnel) which is used for signalling the aircraft when landing, is the observation house which was built for the use of the King when he reviewed the Fleet in 1932. (FLIGHT *Photo.*)

belonging to flights Nos. 463 and 464, came on. The dear old " Dart," its squashy undercarriage seems just right, it lands—usually loaded up with its pilot's suit cases, a ladder or two, and maybe a tail trolley as well, all festooned about it—like a feather. It looks like ? ? ? but it does fly. Then came twelve Fairey III F's, not so old as the " Darts," but three-seaters of proven worth. Their Napier " Lion " engines have a note all their own, and one after another they sit down on deck without any trouble. Their span is larger than the " Dart," and to the uninitiated they seem almost too large for landing abreast the " island," but this does not appear to worry the pilots, who bring them in near the forward lift if necessary. Of course, if they do start to swing there is a bit of a scramble to hold them, as they are not fitted with wheel brakes, but it is not very often that the safety palisades, either side of the deck, are called upon to do their job.

Following these came the long awaited new aircraft, the " Nimrods " and " Ospreys." The former, being single-seater Fleet Fighters and the latter two-seater Fleet Fighter Reconnaisance machines, all driven by " Kestrel " engines. This was the first time their pilots had flown them on, and the more morbid spirits expected—nay, even hoped for—some excitement. They were disappointed, for except the one case already quoted the new machines came on board without anything more exciting to watch other than a series of exceptionally good landings, their wheel brakes evidently assisting considerably. This completed the ship's complement of aircraft, and those which followed were a Blackburn " Ripon," a " III F," and two Avro 504 N's for training purposes.

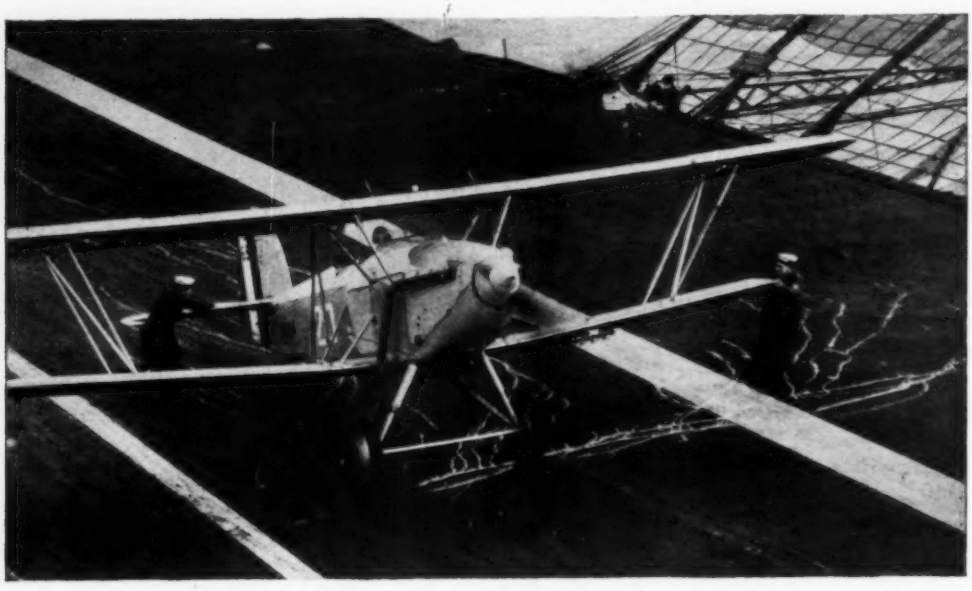
The introduction of the slow flying Avros is fairly new for deck landing, and has proved an unqualified success. We had a number of young potential F.A.A. pilots on board who had done all their training ashore at Leuchars and Gosport. These each made a few landings on the Avros with an instructor in the front seat, and on the next training occasion they will go " solo." After this they go on to the III F's and other aircraft.

With the training finished and the training aircraft gone

A " Nimrod " (" Kestrel ") makes a short landing almost right on to the forward lift. The deck wind screen has already been raised. (FLIGHT *Photo.*)

back to Gosport, the *Courageous* returned to harbour and anchored at Spithead. Here many Dockyard "mateys," ourselves, and other sightseers, like engine experts and aircraft firms' test pilots, were dumped into a leaping motor pinnace seemingly at the mercy of the waves. We finally landed—green and grousing, in many cases!—in the rain-swept Dockyard. Even under those conditions, however, that ancient "nursery," of the Navy had its charm, and as we passed the *Victory* we could not help thinking of the scenes we had just seen; what would Nelson have said at the idea of his beloved seamen taking to the air? Was the day of Jules Verne's "Clipper of the Clouds" still so very far distant. Our Empire was founded and built up upon our supremacy at sea, but now the old order seems to be changing; was it not right that our seamen should continue to be Britain's "Strong Arm," even at the expense of forsaking their traditional element? Might we not even parody a well worn saying: "The Navy on the Sea is dead, long live the Navy in the air"?

C. N. C.



A two-seater Fleet Fighter Reconnaissance machine, the Hawker "Osprey" ("Kestrel") which is landing beautifully on the middle of the flying deck. The palisade in upper right-hand corner is for preventing machines running over the edge. (FLIGHT *Photo.*)

Sqd. Ldr. Hinkler Off Again

SQD. LDR. BERT HINKLER left Feltham at 3.10 a.m. on January 7 to set up a new record for the flight to Australia, at present held by Mr. C. W. A. Scott, whose time was 8 days 20 hr. Hinkler's machine is the "Puss Moth" in which he flew from New York to Jamaica and across the South Atlantic in 1931. Up to mid-day Tuesday no news had been received of his having landed anywhere.

Really Rapid Flying Instruction

MR. LOWE WYLDE has consistently held the view that flying very light aircraft is the safest and speediest way of learning to fly. He has also been at variance, and we feel rightly so, with those people who maintain that to fly machines of this class is only playing at flying. His contention would appear to have been upheld by Mrs. S. M. Green, a director of British Aircraft, Ltd., during the past few days. Mrs. Green had until recently never had any flying instruction at all, nor has she even yet had any dual instruction, despite this she has now passed, perfectly satisfactorily, the tests as prescribed for the A.M. pilots "A" licence. Mrs. Green started under the instruction of Mr. Lowe Wylde and made short straight solo flights down the length of the aerodrome, and then, as in the old Hendon days, gradually left the ground and progressed until she was doing normal circuits. Finally after only 3½ hr. flying she flew her figures of eight and made a perfect landing near a mark, without her engine, from 2,000 ft. In other words, she satisfied an observer that she was a fit and proper person to be given an "A" licence, in exactly the same way as if she had had all the usual dual instruction on a standard type of light aircraft. Whether or not it would be preferable to teach pupils by the dual method, even on these machines, is a debatable point, but we feel that for many pupils it would be safer to send them up with an instructor first. The fact remains, however, that these very light aircraft appear to offer not only cheap and easy flying to the man who can already pilot his machine, but also a means whereby additional people can be brought to this state with a minimum of time and cost. These small machines have created quite a lot of interest lately, and among those who have flown them are:—Mr. Claude Grahame White, and Mr. and Mrs. J. A. Mollison.

Honouring Mrs. Mollison

ON Wednesday evening last week Mrs. Amy Mollison was the guest of the Women's Automobile and Sports Association, the chair being taken by the President, Viscountess Elibanks. From the Prince of Wales came a cheery message, as follows:—"I am glad to learn that the Women's Automobile and Sports Association is honouring Mrs. Mollison on her return from her latest record-breaking achievement. Apart from completing the fastest long-distance flight ever performed by a woman, she has given proof once again of the reliability of British aircraft as well as personal pluck and endurance, which has won her universal admiration." Col. Shelmerdine, Director of Civil Aviation, who was among those present, said he could not see that any good purpose would be served by any further flights across the North Atlantic unless they were with a view to establishing a regular service. In regard to this it will be remembered that the American authorities have gone farther than mere warnings against such flights. The following morning at the Mansion House the Lord Mayor of London presented to Mrs. Mollison, on behalf of the *Daily Sketch* League of Youth, a gold medal of honour.

Mrs. Mollison with Mr. Mollison was the honoured guest at a reception given to her by the British Empire League on Monday, January 9. The reception was held at the British Empire Club, 12, St. James' Square, London, and was attended by a large and distinguished gathering. Among those present were:—Air Chief Marshal Sir Geoffrey Salmond, the Maharaja of Burdwan, Admiral Mark Kerr, Viscount Ratendone, and Air Vice-Marshal Sir Vyall Vyvyan.

FROM THE CLUBS

LONDON AEROPLANE CLUB

It was gratifying to see so many old members during the latter months of the old year. Last week the Club welcomed Miss Cholmondeley from Australia, and Mr. H. D. Wolfson from U.S.A., both of whom have been absent for four years. Looking back over 1932 it is noticed that the average flying hours per machine were 450 for the year, which is well above the normal.

NATIONAL FLYING SERVICES, HANWORTH

The Club can congratulate itself in that during the three weeks ending January 6, the flying times show an increase of 90 per cent. over the flying done in the corresponding period last year. Cadet Soman, who only commenced learning to fly on December 17, and Mr. Pritchard, have now successfully made their first solo flights. Mr. Tangye and Lt. Owen Cathcart Jones have been tested for their G.A.P.A.N. instructor's certificates, and among those who have made cross-country flights were Lord Carlow, the Hon. Mrs. Victor Bruce, and Messrs. L. Chen and R. M. Badhe, while Mr. D. Llewellyn flew to Cambridge, returning to Hanworth at dusk.

BROOKLANDS

The weather has been good during the past week, and has permitted a considerable amount of flying. Everyone arrived on Friday, December 30, when the School reopened, with reports of a good Christmas, and then settled down to work again with a will.

The New Year has started well, with a successful first solo in its first few days—that of Mr. I. Chizik. Mr. Chizik comes from Palestine, and is at the moment in London for study. He says that the development of aviation is at the moment one of the most important factors affecting the Near East, and that it is the duty of everyone who is interested in that region to learn to fly. He rightly points out that the area is likely to be the focus of the world's great air routes—especially those joining the different parts of the British Empire—and he claims that if this advantage is properly used by its inhabitants this will become one of the most prosperous parts of the world. He has therefore learnt to fly himself, and is now progressing towards his "A" licence. Another interesting point which he has raised is that of Palestine and the surrounding countries as a market for aircraft. He says that the Near East is skipping the era of rail transport altogether, and is making increasing use of cars and aeroplanes to reach districts hitherto almost cut off from civilisation. The demand will, of course, increase very rapidly, and the time may come when this will be one of the biggest markets anywhere for British aircraft.

Mr. Opie has now done his height test, and will soon receive his "A" licence. In a short time will be announced the new Brooklands programme for 1933. The track, of course, will proceed as usual, but big things are to happen on the aerodrome. We cannot disclose details for another week or two, but in brief the effects of the coming changes will be to make flying cheaper and easier for Brooklands pupils. A system of "rationalisation"—which is in fashion at the moment!—is to be adopted; this affords the most economical way of running the aerodrome, and the benefit will be passed on to those who use it.

The College of Aeronautical Engineering.—The new College building is now almost completed, and will soon be open for use. Mr. Nelson, the chief instructor, has appeared at the aerodrome, and the first batch of pupils has commenced work at Brooklands. Now that this branch of the College has begun work—thereby completing the scheme which was mapped out at its inception—a complete A to Z training in everything connected with aircraft enginering is at last available in this country. At the moment the students are using the premises of the Brooklands School of Flying, but when the new building is officially opened they will have lecture-rooms, store-rooms, workshops, etc., of their own.

An Innovation.—A new departure is an aerodrome snack-bar, now open. Special arrangements have been made for this, and it will be open every day from 11 o'clock onwards. It should be a very useful establishment indeed.

MAIDSTONE AERO CLUB

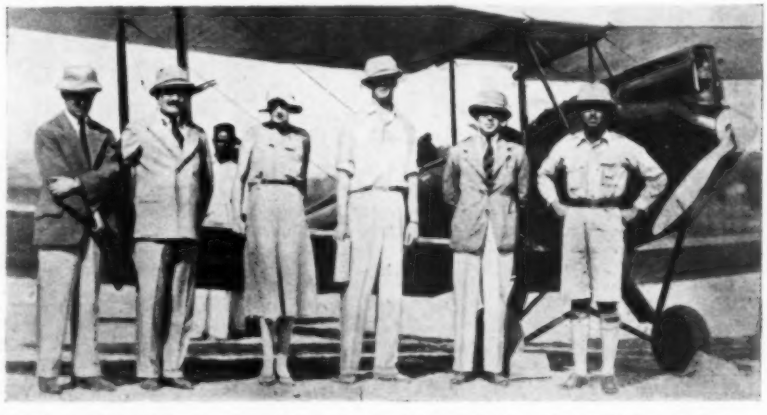
On Sunday, January 8, the Club held their monthly "At Home," dedicated this month to "visitors." A considerable number of strangers came to tea at the Club premises and displayed great interest in the future of the Club and in flying generally. Several new members were enrolled, and several recruits obtained for flying tuition. On Sunday, January 15, there will be a Clay Pigeon Shooting Competition from 3 p.m., with sweepstakes and prizes for those under 18 and those over, and on Sunday, January 22, there will be a Scavenger Hunt from 3 p.m.

READING AERO CLUB

The Reading Aero Club and School of Flying held their dance on Saturday last, over 70 members and friends attending. The proceedings were enlivened by experts from "Peacock Pie," a cabaret produced by Mr. John Langston and his cousin, Miss Winnie Langston. Mr. Massey officiated at the piano, and the company present were entertained by solo dances from Miss Joan Akers. In spite of the "flu," which has stricken down half the personnel here, flying has been proceeding steadily, and a fair number of sales have been made; Mr. B. Mirza, of Bombay, who learned to fly here in 1930, has ordered a "Gipsy Moth" to be shipped out to him; from Riga has come an order for a similar machine, and Mr. Davidson, of Birmingham, has also bought a "Gipsy Moth."

LANCASHIRE AERO CLUB

The Lancashire Aero Club have organised a ball, to be held at the Midland Hotel, Manchester, on Tuesday, January 24, 1933. Sir John D. Siddeley, C.B.E., F.R.Ae.S., and Lady Siddeley will act as host and hostess, and Lt. Col. F. C. Shelmerdine, C.I.E., O.B.E., A.F.R., A.E.F., Director of Civil Aviation, and Mrs. Shelmerdine will attend as guests of the club. The band will be the well-known Cambridge University Quinquaginta Ramblers. The tickets, which include supper, are 15s. 6d. each, and may be obtained from the Secretary, Lancashire Aero Club, Woodford, Cheshire.



FROM LUCKNOW: A group taken at the Delhi and U.P. Flying Club aerodrome, Lucknow, when the Hon.Mrs. Edwin Montagu passed through last November on her flight from the East to England. They are, from left to right: Mr. Stephenson, I.C.S.; Lt. D. G. O'Connell; The Hon. Mrs. Montagu; Mr. R. Belville (her pilot); Mr. Walcolm, I.C.S., and Mr. Chablani. Mrs. Montagu arrived back in London last month.

YORKSHIRE AEROPLANE CLUB (N.F.S.)

Bad weather throughout the week resulted in only about 6 hr. flying, though the December total of nearly 59 hr. brought the yearly total for 1932 up to 1,337 hr., an increase of 150 hr., or nearly 14 per cent., on the total for the previous year.

SKEGNESS AND EAST LINCOLNSHIRE AERO CLUB

Mr. M. D. L. Scott wishes to inform all those interested that he has taken over the sole control of Eastern Air Transport, Ltd., and Skegness and East Lincolnshire Aero Club, Capt. G. A. Pennington having no further connection with either.

The company has at the moment four machines, two "Moths" for school work, a "Puss Moth," and a "Fox Moth." Last year some 6,000 passengers experienced the comfort of a cabin machine, and it speaks well for the work of Mr. C. S. Humphreys, the company's chief engineer, that the "Puss Moth" which was used regularly on taxi-work and joy-riding was able to win the London to Cardiff race at the end of the season. It is hoped that the newspaper contract which was carried out without a single delay between Leicester and Skegness will be renewed this year for a longer period. A certain amount of taxi-work has been carried out during the last two or three weeks, the "Puss Moth" carrying one passenger to Gainsborough and two to Birmingham. Turning to the school side of the business, although it is a slack period of the year, one machine at least has been kept busy. Mr. W. H. Shaw has obtained his "A" licence and is well on his way towards completing the 100 hr. necessary for a "B" licence; some six other pupils are also undergoing instruction, of which two are nearly ready for solo. It is proposed to hold only one pageant this year, at Whitsuntide, as it is felt the public might tire of this form of entertainment. The aerodrome is being improved, and will be fully equipped for night flying; also it is hoped that shortly an aerodrome and flying school will be opened at Lincoln with municipal support.

LEICESTERSHIRE AERO CLUB

Flying times for December have been 49 hr. 50 min., in spite of the weather being not altogether favourable. The "Puss Moth" has been off flying duties during the whole month whilst its engine has been undergoing a complete overhaul at the maker's. Messrs. D. G. Henderson and W. de M. Dyson-Laurie obtained their "A" licences, and Maj. C. L. C. Clarke passed all his tests. Messrs. T. S. H. Bailey, G. W. Peel and R. H. Potter made successful first "solo" flights. On December 15 Mr. R. C. Winn, the Chairman of the Flying Committee, gave a lecture in the club-house on the Rules and Regulations which beset the Civil Aviator, and on January 5 the chief instructor, Flt. Lt. G. N. P. Stringer, lectured on the Theory of Flight.

THE AIRCRAFT CLUB, HARROGATE

The Harrogate Club claims to be the only remaining club in North East England to retain an active interest in soaring, and this year an attempt is to be made to arrange regular gliding and soaring practice in the Hambleton or Cleveland Hills; but in order to carry out this project more active and keen support is needed of a personal and financial nature. Two new machines are being built in the clubroom, which is a regular hum of activity every Tuesday and Friday from 6-11 p.m. The Club's annual general meeting will be held on Friday, January 20, at 8 p.m., in the clubroom, and intending new members will be most heartily welcome.

SCOTTISH FLYING CLUB

The *Scottish Flyer*, the official journal of the Scottish Flying Club, reports a very successful past year. The Club has been re-equipped with new "Gipsy III Moths," a "Puss Moth" has been added to the establishment, the number of hours flown has easily surpassed all previous records, and the cost of flying has been substantially reduced. Praise is due to the chief and honorary instructors and to the engineers; they may well feel proud of their year's work, and it is to be hoped that all members of the Club will endeavour, during 1933, to improve the standard that has been set up. The flying hours for 1932 amount to 1,744 hr. 40 min., as compared with 1,280 hr. 25 min. of 1931, 1,414 hr. 15 min. of 1930, 1,150 hr. 45 min. of 1929 and 1,060 hr. 35 min. of 1928.

ANNUAL REVIEW OF AIR SERVICE TRAINING, LTD.

THE year just passed has been a very successful one for the School of Air Service Training at Hamble, for since the Establishment was opened by H.R.H. the Duke of Gloucester in June, 1931, pupils from all parts of the world have completed or are undergoing training at the School.

During 1932 a total of 4,300 hr. was flown and in addition to 70 civilian pupils, who passed through the School, 150 officers of the R.A.F. Reserve underwent their annual training. Forty certificates were issued to British and foreign civilians and to officers of the Italian, Norwegian, Finnish, Greek and Siamese Air Forces.

Among well-known pilots who attended the School during the year under review were the following:—Mrs. J. A. Mollison, Miss Winifred Spooner, Lady Drummond-Hay, The Hon. Lady Bailey, The Hon. Mrs. Victor Bruce, Mme. H. Forslev, the wife of the Chief of the Danish Military Air Force, Lord Amherst, Sir A. Beit, Bart., M.P., M. le Vicomte de Sibour (France), Count Seilern, M. Bret (France) and Mr. W. D. Campbell (America).

Seaplane training made a very good start last year and this year's programme provides for training on small flying-boats (amphibians) and Avro six-seater multi-engined aircraft.

At present the School fleet of machines includes:—Two "Avians"; two "Cadets"; one Avro "Tutor"; one Avro "Trainer"; four "Atlases"; one "Siskin"; three D.H. 9.J's; one "Avian" seaplane; one Avro "Tutor" seaplane; one Avro 504 hydroplane. By next March the following additions will have been made:—Seven "Cadets"; one Avro VI, and two "Cutty Sarks."

The School staff, with Group Capt. R. J. F. Barton, O.B.E., as Commandant, and Flt. Lt. H. F. Jenkins as Chief Instructor, consists of six flying instructors, one chief ground instructor and seven resident technical and assistant ground instructors. By April of this year the number of flying instructors will be increased to eight.

The contract with the Air Ministry for the training of R.A.F. Reserve pilots has been renewed for a further four years with the addition that the School is to undertake the training of *ab initio* pupils. The School has also secured the Air Ministry contract for seaplane training in connection with the R.A.F. Reserve, and for this purpose amphibian aircraft will be used.

Arrangements have been made whereby a number of students undergoing training for their ground engineers' licences at the College of Aeronautical Engineering, Chelsea, are to be transferred to Air Service Training during the last nine months of their training with a view to affording them practical experience in the maintenance of various types of aircraft and engines.

Undoubtedly one of the most interesting courses available at the School is the one, started last autumn, intended for those who wish to make civil aviation their career. At the termination of their 3-4 years' training, pupils will have completed 300 hr. flying and will be in possession of the following qualifications:—"A" and "B" Pilots' Licences; Blind-Flying Certificate; "A" and "C" Licence for Parachutes; "X" Ground Engineers' Licence for Compasses; Second-Class Navigators' Certificate; Air Ministry W/T Air Operators' Certificate.

Seven pupils—some ex-public school boys—are taking this course at present. The next term, commences on February 6, when another batch of pupils will be reporting for training. The autumn term commences at the beginning of September, 1933.

The buildings recently occupied by the Hampshire Aeroplane Club have been taken over by the School and are being converted into additional instruction shops and lecture rooms. The wireless section, consisting of six rooms, is already complete, and a number of pupils are now undergoing training for the Postmaster-General's W/T Air Operators' Certificate. It has been found necessary to enlarge the living accommodation at the School, and an additional block of 14 bedrooms is now in course of erection. This will bring the total number up to 42.

AIR TRANSPORT

THE AIR MAIL SERVICES

DURING the last two years considerable correspondence has passed between the London Chamber of Commerce and the General Post Office, which has served to emphasise the increasing interest taken in air mail services and the great importance that is attached by the business community to the facilities offered by this method of communication. The Chamber is continuing its agitation for the further development of air mail services, and has issued the following statement.

"It is understood that the Postmaster-General is arranging for some special propaganda in connection with the air mail services, which was one of the points included in the Chamber's representations. Apart from this, however, and the combined air fee and postage rate announced in February, 1931, its proposals have not been adopted.

"As regards the institution and extension of air services, it was made clear by the Postmaster-General in reply to the Chamber's representations in January, 1931, that the control of the development of British Aviation and the payment of subsidies is vested in a single authority, the Minister for Air, under the Air Transport (Subsidy Agreements) Act, 1930. The Chamber cannot, however, understand the argument that the Post Office only undertakes to use the fastest means of transport available at the time and not to establish special means seeing that special postal trains carry American mails from Southampton to London, special postal trains carry mails only between London and Marseilles and various other services are devoted solely to the conveyance ot postal matter. If the Post Office is ready to establish and pay for these services, it is thought that arrangements should be made for establishing the much faster services which can be provided by air transport.

"In reply to the Chamber's latest representations, the Postmaster-General has indicated that the air services are and must remain for some time to come a very costly method of transport as compared with sea or land services and that the suggestions put forward by the Chamber for increasing the acceleration offered by air transmission could only be carried out at heavy cost to the Exchequer and, on the ground of economy, it was not possible at present to take action on the lines suggested.

"As regards the Indian service, it is admitted that the time of transmission to India has now been reduced to six days, although the mail actually arrives at Karachi on the seventh day after despatch. Moreover, there is evidence of the reliability and punctuality of the service in the last eighteen months, upon which Imperial Airways are to be congratulated. It seems, however, that the period of transit could be further reduced seeing that the mail is carried from Paris to Brindisi by train.

"The Chamber has advocated the establishment of special night air services to important centres on the Continent. It is understood that the organisation and co-ordination of night air mail services was to have been the subject of discussion at an international conference last summer, but that, owing to the general economic situation the conference was postponed. It seems, however, to the Chamber false economy to postpone indefinitely such an essential development of the air mail as night services, which enable correspondence to be despatched by air at the end of the working day. If only one or two night services could be inaugurated as an experiment, valuable experience would be gained. The utility of these night services has already been shown by the German service operating in the summer months.

"As regards the Chamber's suggestion for the reduction of the minimum weight unit for air mail correspondence to ¼ oz., the Postmaster-General has expressed the opinion that this would be open to strong objection. The experience of the Post Office indicated that such a decrease in charges as might be practicable, say for example an inclusive charge of 4d. per ¼ oz. to India instead of 6d. per ½ oz., would not be attended by any commensurate increase in traffic and the most probable result would be on the one hand an actual loss in the operation of certain services and on the other a definite check to that growth in the weight of the mail which the carrying company naturally expected when the existing arrangements were entered into. If the Post Office were constrained to adopt a measure which had a detrimental effect on the growth of the actual weight of mails conveyed, the result would in all probability be an immediate claim from the company for a revision of the existing payments for conveyance. The Postmaster-General felt that he would be unable effectively to resist such a claim. The Post Office has in the meantime instituted the Air Postcard, but although many of the objections advanced by the Department against a ½-oz. letter would seem to be equally applicable to a postcard, a postcard does not offer the same facilities as a letter.

"It is understood that the Post Office is considering two additional proposals submitted by the Chamber's Civil Aviation Section for the introduction of an air mail sample rate and for the reduction of the minimum unit of weight for air parcels

"Within the last few days, the Section has further submitted to the Postmaster-General that it would be advantageous if the administration of the air mail were separated from that of the ordinary postal services. It is felt that a stage has been reached, due to the development of air transport, when considerable technical knowledge is needed in the handling of the air mail; and that points are constantly arising and new problems have to be faced which emphasise the desirability of appointing an Executive Officer who will be responsible for the administration and development of the air mail. It is thought, moreover, that the present might be a convenient opportunity for making such a change as is proposed in view of the recommendations of the Committee of Enquiry on the Post Office."

THE INDIAN AIR MAIL

WE have always contended that the full benefits of the Croydon-Karachi air mail would not be felt until a comprehensive system of distribution by air throughout India were adopted. The *Civil & Military Gazette* of Lahore (the paper on which Rudyard Kipling first made his name) has been devoting a series of leaders to air mail deliveries. On November 30, 1932, the paper wrote:—

Air Mail Delays

"We fear that the air mail service between Great Britain and India is fast losing the confidence of many of its supporters. For two weeks now the mails have been late and no explanation has been forthcoming from Imperial Airways. In view of the heavy charges for an ordinary letter or packet the public might reasonably suppose that the cause of delay would be published. Instead they are left in the dark and the Post Office is not in a position to enlighten them. In fact the Post Office appears to get very little information about the air service and when the mails may be expected. Those who want information in Northern India find that the most satisfactory way is to communicate direct with Karachi. The delay and lack of information are doing the air mail service a great deal of harm among those who have supported it in the past. There is a growing impression that since Imperial Airways opened their service from Britain to Cape Town they have not been paying the same attention to the Indian air route.

"If the air mail arrives to time the public in the Punjab have the invaluable advantage of being able to reply to letters the same day. If it is late, there is little point in using the service. The public would certainly appreciate regularity more than speed, and if it is not considered possible to keep to the original timings, there seems no reason why the machines should not leave England a day earlier. The present doubt as to the arrival of the air mail is making business men who use this service wonder whether the additional expense involved is worth it. But the whole of the delay of the air mail cannot be attributed to Imperial Airways. The Indian Post Office does little to overcome the inconvenience caused by the late arrival of the machines in Karachi. For instance this week the air mail was in Lahore on Tuesday evening, but no effort was made to deliver it until the next morning."

On December 10 the *C. & M. G.* returned to the attack, stating that the air mail "is due to arrive in Lahore on Sunday evening, but in consequence of the lack of co-ordination between the services which handle the mail it will not be delivered until Monday morning. This delay

on the part of the Post Office means that this mail cannot be answered in time to catch the outgoing machine unless the extra cost of sending letters via Hyderabad, Sind, is paid. It is difficult to understand why the Post Office cannot deliver these letters on Sunday night, having them sorted immediately they arrive, or at least make provision so that letters may be collected by addressees from the Post Office. This lack of co-ordination between the departments responsible for handling the air mail is doing considerable harm to what should be a very valuable service."

On December 12 the same paper reported that the outbound machine had been delayed and that the mail would not arrive in Lahore until the Monday evening; and it advised Imperial Airways to issue a statement on the subject, as the public would be more sympathetic towards the service and its difficulties if the facts were known. At the same time it stated with appreciation that its suggestion for a window delivery at the Lahore General Post Office had been adopted. Evidently the time-honoured *Civil & Military Gazette* is a "paper which gets things done."

Air Transport in Canada

IT would seem that the position of air mail transport in Canada, which has not been particularly happy of late, is improving somewhat. The Department of National Defence at Ottawa is making arrangements for the establishment on Canada's transcontinental air route of 25 emergency landing fields, located in what might be called "blind spots," consisting of wooded or more or less sparsely inhabited sections, where facilities for safe flying do not at present exist. Throughout northern Ontario, where the largest part of the programme will be carried out, there are innumerable lakes on which seaplanes may be brought down, but a lack of landing fields for aeroplanes equipped with wheels. The programme has been arranged by the Civil Aviation Branch of the Department of National Defence. It is part of a relief programme of $300,000, which also includes repairs to the walls of the citadel at Quebec and on the citadel at Halifax. The work on the airway system will include clearing the selected sites and grading, and will be carried on during the winter by single unemployed men. In preparation for the commencement of operations the sites are now being surveyed. Plans contemplate establishing five of the emergency landing fields in the province of British Columbia, three in Manitoba, eleven in Ontario, two in Quebec and four in New Brunswick. On completion of the work conditions will be much improved for direct transcontinental flying by an all-Canadian route. Finally, it was announced last month that Canadian Airways, Ltd., will carry passengers, mails and freight along the North Shore of the St. Lawrence this winter. The Government has again awarded to this concern the air mail contract for the Quebec-Seven Islands route. Two trips each way will be made every week, commencing as soon as landing conditions at Seven Islands are suitable for machines equipped with skis. In addition to the regular air mail and passenger service, which will be maintained with heated cabin Fairchild 71 machines, Canadian Airways propose operating a Junkers 34 monoplane between Quebec, Seven Islands and Anticosti Island for the transportation of passengers and freight. A Fairchild 71 machine will be held in reserve at Quebec for mail and passenger service if and when required.

South African Air Routes

CAPT. C. GORDON ROSS, D.F.C., of the South African Air Force, and Air Sergt. Dones are engaged on important pioneering work in the chartering of South Africa's air routes. They have travelled from Natal through the Transkei, visiting East London, Port Elizabeth and George. From Capetown they will follow the Imperial Airways route. The British Air Ministry have provided the necessary instruments.

Zeppelin Plans for 1933

IT is reported from Berlin that plans for an extensive Zeppelin service between Europe and South America were revealed by Dr. Eckener, speaking before a distinguished gathering which included Ministers, Reichstag Deputies, burgomasters and heads of shipping companies. Dr. Eckener said that 36 South American trips were scheduled for next year, after the Governments of Spain and Brazil had agreed to make the necessary arrangements. During the good weather the airship would leave Friedrichshafen, land at Barcelona for French and Spanish passengers and mail, and for refuelling, and then proceed to Rio Janeiro and Pernambuco. On the return flight they would fly from Rio to Seville, halt there and then return to Friedrichshafen. In winter, because of fogs and low clouds over Friedrichshafen, they would start from Barcelona for South America. They had definite assurances from the Brazilian Government for the erection of a hangar at Rio as well as from the cities of Barcelona and Seville, provided that the latter could get financial aid from the Government. The plans for a North Atlantic regular transport service had by no means been abandoned, Dr. Eckener added, but until the North Americans had found the silver lining in the cloud for which they were looking, the plans must remain in abeyance. The name *Hindenburg* is proposed for the new German Zeppelin now nearing completion.

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

AIR MAIL TO AUSTRALIA

[2820] In my letter to you of September 21, 1932, which you kindly published, I stated that the Air Convention in Australia was not as truly representative of aviation interests as the Association of Australian Aviation Industries.

Therefore, I have read with some astonishment the letters in your issue of January 5, and with particular astonishment the one from Mr. W. R. Garrett, in which he states: "This Convention is representative of the opinion of 90 per cent. of the aircraft industry of Australia, the only exceptions being a few subsidised isolated concerns and Aero Clubs, all of whom have interlocking financial interests which make them the equivalent of a monopoly under departmental control."

As this is in direct contradiction to the statement in my letter, I have consulted the official list of Australian aircraft registrations in order to obtain some idea of the number of aircraft in operation which are directly controlled by the prominent members of the Air Convention. Messrs. MacPherson, H. J. Larkin, W. R. Garrett and B. Murray are, or were very recently, directly connected with the two companies, Australian Aerial Services and the associated company, Larkin Aircraft Supply Company. These two companies have on the register at June 30, 1932, two D.H. 50A's, one Blackburn "Bluebird," and one Sopwith "Antelope." Of the other leading members of the Convention, Mr. J. V. Fairbain had on the register one de Havilland "Moth," while Mr. Grahame Carey, who represents Commercial Aircraft Owners, actually still has registered one Maurice Farman "Shorthorn." Mr. H. T. Shaw, representing private pilots; Mr. E. G. Roberts, representing importers of aircraft and aircraft parts; and Mr. J. Taggart, representing gliding clubs, are not shown as the owners of any machines. This completes the members of the Committee. The official convener of the Convention, Mr. Hussey, is also not shown as the owner of any registered aircraft.

The leaders of the Association, on the other hand, directly represent over 50 aircraft, including two Vickers "Viastras," one Saro "Windhover," four D.H. 61's, two D.H. 66's, ten D.H. 50's, and four Avro 10's. There appears to me, therefore, very little doubt that this body is the more representative of active aviation, unless conditions have altered very rapidly since June 30, 1932.

In bringing these facts to your notice, it has been my desire to show you the true importance of the Association of Australian Aviation Industries, rather than to bring discredit on the Air Convention, which contains many pilots and others who have in the past done yeoman service for aviation, and I hope that they have not brought discredit upon themselves by their extravagant claims in the letters published in your issue of January 5.

175, Piccadilly, London, W.1. LEE MURRAY.
January 10, 1933.

AIRCRAFT IN RELATION TO PETROLEUM TECHNOLOGY: USE FOR SURVEY AND TRANSPORT

By H. HEMMING, A.F.C., F.R.G.S., A.F.R.Ae.S.

Paper read before the Institution of Petroleum Technologists at the Royal Society of Arts, on Tuesday, January 10, 1933, at 5.30 p.m. (Condensed.)

AIR surveying provides a means of obtaining information of technological value, and may be subdivided into:—

(*a*) Visual reconnaissance.
(*b*) Photographic surveying.

Both subdivisions should be of interest to the petroleum technologist, and more especially to the following:—

The Oil Geologist, in obtaining information regarding land-forms.

The Oilfield Engineer, in obtaining data for the selection of pipe-line routes, field railways, roads for transport of drilling equipment and field supplies, sites for tank farms, etc.

The Marine Engineer, in obtaining information relating to coastal topography, suitable sites for sea loading stations, etc.

Air Surveys made for the Oil Industry.—Unfortunately, the British companies who carry out air-survey operations have done little serious work for the British oil companies, and the oil industry of the Empire has not yet appreciated the considerable benefits from having air surveys made

Recently, Mr. Donald Gill read a paper before the Institution of Mining and Metallurgy on "Aerial Survey in Relation to Economic Geology." That paper forms an authoritative treatise on the geological aspects of the subject.

Mr. Gill says that "Aerial Geology" is a very new geological tool. The use of air survey methods by the oil companies has, naturally, been confined to certain areas of sedimentary rocks for ascertaining the position, nature and extent of oil structures. The saving in time in conducting an examination by using air survey methods is put as high as from 50 to 80 per cent., due to: (1) the speed with which the contact prints can be delivered (as against the preparation of a topographical map), and (2) the time saved in the field by having much of the normal work of mapping appearing already on the photographs.

The Development of Air Surveying.—During the war, air photography proved to be of the greatest value. After the war no time was lost in adapting aircraft and the air camera to peaceful pursuits, and in this respect the Canadian Government showed great initiative. The Canadian Government used their Air Force for photographing undeveloped and unmapped areas and also surveyed and valued large areas, of forest by this new method. To-day, some 400,000 square miles of the Dominion have been mapped by air survey methods.

The Report on Civil Aviation for the year 1931, issued by the Dominion of Canada Department of National Defence, states in its introduction that: "Air transport in the Far North shows great activity. The discovery of important mineral deposits in the North-West territories is directly attributable to flying. Without aircraft, these discoveries and their development would have hardly been possible—the application of aerial photography to mapping and the use of air transport by the Survey Services has been on a wider scale than ever before." These Canadian reports are well worth studying.

The first air surveying expedition to leave the British Isles was sent out under the leadership of Maj. C. K. Cochran-Patrick, D.S.O., M.C., in March, 1921, by a company of which the lecturer was a founder, to make an air survey of part of the Orinoco delta for an oil company.

Most of the work in the Empire, with the exception of that in Canada, has been carried out by two British companies—the Aircraft Operating Co., Ltd., and the Air Survey Co., Ltd. These companies between them have to date made air surveys, both photographic and reconnaissance, of areas covering in total approximately 200,000 square miles. The whole of this work has been financed by private enterprise unaided by any form of Government subsidy, and covers areas in Africa, India, Burma, Iraq and South America. It is submitted that this is a very remarkable achievement for unsubsidised private enterprise.

Photographic Surveying.—There are two methods in use: (1) the vertical method; (2) the oblique method. They are described as follows:—

1. *The Vertical Method* is the one which is most likely to interest the petroleum technologist, for the photographs are taken as near to the vertical as is possible, and so provide a pictorial map of the ground.

The photographs can be pieced together so as to form a mosaic or picture map, or the topographical data can be transferred from the photographs and put into map form.

For maps on scales up to 1/50,000 (1.26 in. = 1 mile) the vertical system of mapping is used. This method is also essential when the air survey is required for pipe-line construction. In the States the scales chiefly used for geological work are said to be those of 2,000 and 1,000 ft. to the inch, that is (1/24,000 and 1/12,000 respectively).

2. *The Oblique Method* has only been used successfully for mapping large areas of comparatively flat country in Canada and in Northern Rhodesia. Where small scales are required of the order of 1/250,000 (3.94 miles = 1 in.) this method is particularly useful, as it is both rapid and economical.

To the uninitiated, the oblique photograph is easy to read, as it gives a view similar to that obtained from a high hill. These photographs will undoubtedly supply the geologist with a general idea of the nature of the country, but for the close examination of areas prior to prospecting the vertical photograph is necessary.

Economic Surveys.—Where an economic survey is to be made, geologists, ecologists, forestry and other experts as required would go into the field with the ground control parties. They would interpret the detail as seen on the photographs by checking on the ground. For this purpose areas would be selected on account of their easy accessibility. With the knowledge gained, the photograph may be indexed and then used for the interpretation of detail of the remote or inaccessible areas, which have detail similar to those areas already investigated on the ground.

In assessing the value of air surveying, therefore, it is important to remember that a great deal of this information relating to the economic resources of the country may be obtained, although the main object of the survey may be for mapping purposes only.

Co-ordination of Interests.—The diversity of interests that can be served by an air survey calls for some method of co-ordination, so that all may obtain the benefits of the survey at a minimum of cost. The lecturer has submitted proposals to the various Government Departments for the creation of an Imperial organisation which would be independent of Government control.

In the lecturer's opinion, the maximum benefits can only be secured from air surveying if really large areas are surveyed—this implies co-ordination of interests. The photography can be completed so rapidly that only a comparatively few special air survey aircraft would be required. These could be located at suitable bases and sent from one contract to another, so as to take advantage of the most suitable weather conditions. Weather plays a most important part in air surveying, for clear skies are essential to the making of clear photographs. As several months' work on the ground may be provided in a few hours' flying, it is essential that the right time of the year is chosen for the work. By having a sound scheme of co-ordinated interests the survey aircraft could be switched from one area to another as dictated by weather conditions, instead of piling up cost in idleness on the ground. For example, in Rhodesia the area of 65,000 square miles was photographed in 50 flying hours, then the aeroplane was available for other work, yet the rest of the work on the ground took 15 months to complete.

A unique vertical photograph of the Zambesi River, showing very clearly indeed the geological fault which caused the Victoria Falls. (A) is the continuation of the fault ; (B) the face of the Falls ; (C) Livingstone Aerodrome.

Equipment Used by the British Companies

Aircraft.—To-day aircraft for survey may be considered in classes:—

1. Light aircraft for the survey and reconnaissance of small areas, at moderate altitudes, or of areas where long duration of flight, and of maximum security from forced landings is not an essential. The D.H. "Moth" type has proved to be well suited for such work.

2. High performance single-engine type to be used where good range and high ceiling is required. An example of this type is the Fairey III F, which, fitted with floats, was used recently by the Air Survey Co., Ltd., for the survey of swamp areas in the Sudan and Uganda.*

3. The multi-engine type for surveying large areas of unexplored and difficult country where maximum range, ceiling and reliability is a first consideration. As air surveying finds its greatest scope in dealing with large areas of little known territory, it is proposed only to describe this last type.

Costly experience showed that the ideal aircraft should fulfil certain requirements, of which the following are of particular importance: (1) Maximum reliability ; (2) long range ; (3) high performance ; (4) uninterrupted view for the pilot forwards and downwards to the vertical and also to each side ; (5) comfortable cabin in which the observer or photographer could work ; (6) alternate positions for oblique and vertical cameras, situated where parts of the aircraft would not mask the view ; (7) easy control for accurate flying ; (8) suitable construction to enable the aircraft to weather extremes of climate.

It was only by having an aircraft with these characteristics that the area of 65,000 square miles in N. Rhodesia could be surveyed with safety and efficiency. Mr. Alan S. Butler, the Chairman of the Aircraft Operating Co., realised this, and had a machine built by the Gloster Aircraft Co., Ltd., at his own expense.†

The machine is of biplane construction, with the pilot located right in the nose. It is equipped with two Bristol "Jupiter X" type engines. On its official trials the machine did a full-out speed, while flying level at 19,000 ft., of 121 m.p.h., its cruising speed being 108 m.p.h. with full survey load. The maximum range at cruising speed with full load was found to be 800 miles. Height could be maintained on one engine up to 9,000 ft.

Special attention was given to refuelling and to the fitting out of the machine for survey purposes. It was flown

* FLIGHT, January 31, February 6, 1930.

† FLIGHT, November 1, 1929, p. 1159.

out to Africa by Mr. Butler, and immediately used for the survey referred to.

The Air Camera.—The camera used by the British operating companies in their recent work is known as the Eagle type I, and is made by the Williamson Manufacturing Co., Ltd. It is constructed throughout of metal, and can be fitted with lenses of focal lengths varying from 6 in. to 20 in., according to requirements of scale.*

In order to secure good colour values Panchromatic films are used. The development of "infra-red" photography is being watched with considerable interest, as its succesful application to vertical photography, if that be possible, should greatly extend the use and value of air photography for geological work, because the range of colour values obtainable will be increased. "Infra-red" photography, if successful, should also enable flying costs to be reduced considerably, by making it possible for photography to be carried out under atmospheric conditions which are not possible at present. (*Vide* FLIGHT, September 2, 1932.)

Operations in the Air

A brief description will now be given of the operations in the air on an air survey flight. When at photographic height, say 14,000 ft., the pilot finds the speed and direction of the wind by means of his wind gauge bearing plate. With this data the photographer works out the intervals that he must allow between exposures, so as to secure a 60 per cent. overlap, and sets the required interval on the intervalometer on the remote control. The pilot meanwhile flies towards the starting point for the first strip, on the bearing he is to steer on. He settles down to a steady course and speed. Looking ahead, he picks up leading marks, for by steering on leading marks he can instantly correct for local changes of wind. A compass will not enable him to do this, though, of course, the pilot is checking his course by compass all the time. When vertically over the starting point the observer switches on the camera; immediately the first exposure is made, and then the camera motor winds the film ready for the next exposure and resets the shutter. A few seconds before the time due for the next exposure the red light goes on and warns the pilot to steady on his course, then the next exposure follows, and so the process is repeated throughout the flight.

Operations on Ground after Flight.—The films are developed in special tanks as soon after the completion of the flight as possible. After that the films are rectified and printed in the autofocussing enlarger to the scale required. The prints are then turned over to the drawing office for mapping purposes, and also issued to the geologist and others interested in their interpretation.

Cost and Time.—Costs depend on the scale required of the prints, mosaics or maps; the size and nature of the area, its position, accuracy required and several other factors.

The following extract taken from Burma Forest Bulletin No. 11, deals with the air survey of the Irrawaddy made by the Air Survey Co., Ltd., under the direction of Mr. Ronald Kemp, in conjunction with the Burma Forestry Department.†

"Part IV.—Summary of Results

1. *Cost.*—The cost, including ground work and mapping, has worked out at about Rs. 293.7 per sq. mile. A ground survey on the same scale would have cost in the neighbourhood of Rs. 500 per sq. mile, without giving any indication of the types of forest growth.

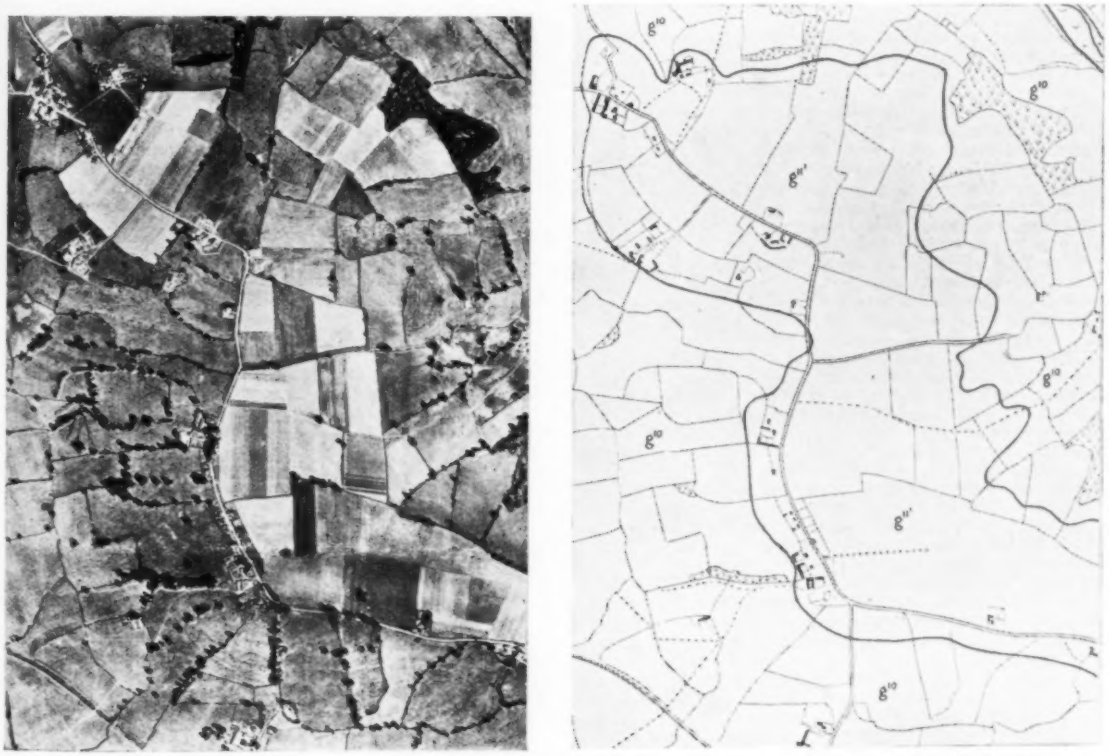
2. *Rapidity.*—The actual survey was completed in five months, and the whole period taken from the commencement of the fixing of the ground control to the completion of maps and stock-maps should not greatly exceed one year. Ground survey would have taken three to four years.

3. *Accuracy.*—This is far in excess of anything that could have been obtained by ground survey in this type of country, except at a further increase in cost and time.

4. *Details Available.*—The areas and distribution of the different types of forests are not only obtainable at no increase of cost, but with an accuracy that it would have

* FLIGHT, July 25, 1929, page 794.

† FLIGHT, Jan 31, Feb. 6, 1930.



A vertical photograph in Wiltshire which shows how easy it sometimes is to follow geological features from the air. On the map (right) the boundary of the Oxford Clay (g^{10}) is marked, and in the photograph both this, and the central area of calcareous grit (g^{11}) is very clear.

taken years and a considerable expenditure to have equalled."

The only comparative costs relating to air surveying for oilfield development that the lecturer has been able to find are contained in an article on "Aerial Photographic Oil Surveying," by Charles E. Kern, in the *Oil and Gas Journal* of July 16, 1925. This writer says that it is understood that from $65 to $100 per sq. mile has been charged by private air survey companies for making surveys in heavily jungled terrain similar to that in Venezuela, whereas petroleum companies are paying about $260 per sq. mile for ground survey work in such country. No mention is made of the scales used.

One of the greatest advantages of air surveying, that of speed, has curiously enough proved to be one of its greatest handicaps. The survey may be completed so rapidly by air methods that payment might have to be made within, say, two years, instead of, say, six years, if done purely by ground methods. As the former may cost, say, a third of the latter, the fact that a larger amount of money is required within the two years' period has prevented contracts being secured. This is an example of false economy, which unfortunately is very prevalent to-day, and is holding up development of benefit to the Empire and to trade.

Transport

The use of aircraft for transporting personnel and material may be considered under three subsections:—

(*a*) Regular air services for the carriage of passengers, mails and freight operating to a time-table.
(*b*) Other air services.
(*c*) Light aircraft.

Subsection (*a*), which mainly consists of subsidised trunk services, need not be dealt with here, as, apart from generally benefiting the community as a whole, they have no particular relation to oilfield development. It may well pay oil companies to establish regular air services in their oilfields, in order to link up with trunk services and with headquarters.

Subsection (*b*): *Other Air Services.*—By using aircraft in oilfield development, the oil industry should be able to effect many economies, both in administration and in actual work in the field.

Transport by aircraft of men and materials is of interest when saving of time is a main object, and it is understood that in many oilfield conditions or contingencies this is often the case.

Drilling machinery and casing in 20-ft. lengths could be carried by aircraft to the site of a test well in territory surrounded by difficult country, provided facilities can be made available for landing and taking off of the aircraft.

It is understood that it frequently happens that some important and even vital piece of equipment breaks down, or is required urgently, to an extent that the life of a well may be threatened by its absence; it could be rushed to the spot by air if the proper service for such purposes was organised and available.

It is suggested that fires in the oilfields could frequently be curtailed by the rapid conveyance of special fire-fighting equipment to the spot.

The rapid transport of material and equipment in cases of urgency has its parallel in the conveyance of executive officers, technical experts or specialists to places far distant from their base locations when need arises. Thus air transport is capable of enormously increasing the range of such people's usefulness in the case of an oil company operating over a large area.

In the medical services of the oil companies air transport is capable of playing a useful part, conveying medical officers or surgical equipment rapidly to districts where their presence is urgently required or rushing the patients themselves to hospitals for special treatment.

Operations.—It is understood that British oil companies are using aircraft to a limited extent, and that arrangements were made recently to use aircraft for transportation of personnel and supplies in connection with pipe-line construction.

Aircraft are used a great deal in the States in connection with oilfield development. An interesting example of their use comes from Mexico. According to *The Oil Trade*, of June, 1926, the transport of pay rolls by aircraft over territories infested by bandits was adopted by the oil companies operating in the country.

Cost.—An estimate for the operation of the smallest example of an economical air transport machine, of which the D.H. "Fox Moth"* is representative, is given as follows:—

The aeroplane, with an engine of 120 h.p. and with maximum load weighing 2,070 lb., has a maximum speed at sea level of 107 m.p.h. and cruising speed of 91 m.p.h. at 1,000 ft. Petrol consumption at cruising speed is 5.25 gall. per hr., oil 1 pint per hr. Maximum load consists of pilot, three passengers and hand baggage, or pilot and 600 lb. of freight, with seats removed. Capacity of cabin when used for freight is 50 cu. ft. The following costs relate to operations in this country, and are above those estimated by the de Havilland Aircraft Co., Ltd., who have a reputation for being conservative. The estimated costs given may be adjusted to suit special conditions. In order to secure the maximum reliability obtainable, not less than two aircraft should be estimated for:—

Capital Cost—		
2 Aeroplanes	£2,000	
Incidentals	£200	
		£2,200
Annual Charges—		
5 per cent. on capital	£210	
Obsolescence allowance at 20 per cent.	£440	
Insurance at 10 per cent.	£220	
Housing	£75	
2 Pilots plus insurance at £600 each	£1,200	
		£2,145

Flying Costs—

Flying costs and maintenance, including mechanics' wages, are estimated by the makers at 17*s.* 11*d.* per flying hour, say, £1 per flying hour. Assuming that the average ground speed is taken at 80 m.p.h., operating costs for 500 hours per year for each machine, making a total of 1,000 hrs. per year, work out as follows:—

Cost per flying hour—
1,000 hrs. at 80 m.p.h. = 80,000 miles per year
Cost per flying hour = £2,145, plus (£1 × 1,000)
= £3,145 .. £3 2 11

Cost per aircraft mile—
80,000/£3,145 .. 9·43d.

Cost per passenger mile.
(3 seats) .. 3·14d.

Cost per ton mile (600 *lb.*) .. 35·2d.

Aerodromes and Landing Grounds.—For oilfield work temporary landing grounds could be made, unless of course a regular service is to be established. In the first air survey made in Northern Rhodesia, before the special air survey aeroplane was built, 39 emergency landing grounds, each measuring 500 yd. by 100 yd. were made in the bush in addition to the main aerodrome, measuring 750 yd. by 750 yd. To-day, with the increased performance and reliability of modern aircraft, comparatively few landing grounds are required for emergency purposes.

The survey of the 65,000 sq. miles successfully completed recently in Northern Rhodesia was made from four aerodromes and no forced landings had to be made. This alone justified the building of the Gloster A.S. 31 at a cost of over £15,000.

Freight and Handling.—In 1925 the lecturer and others drew up a detailed proposal for carrying by air all the drilling machinery, power plant and casing necessary to bring a test well into production. A leading manufacturer of oil tools drew up detailed drawings for sectionalising the necessary equipment that would have to be carried. It was pointed out that in certain cases the great waste resulting from the abandonment of roads, which had to be built to get the material to the site, would pay for the cost of the aircraft and their operation many times over if the test well proved to be non-productive. Several months were spent in drawing up these proposals, but they were not taken up by the company to whom they were submitted.

To-day there is no difficulty in building or adapting aircraft to carry heavy oilfield equipment, while medium sized aircraft of the 120- to 300-h.p. class could carry geologists with field equipment such as the Eötvös Torsion balance, and also "fishing tools" and other types of tools and equipment. Considerable experience is now available on the correct handling and loading of aircraft for heavy freight.

In conclusion, the lecturer wishes to record his great indebtedness to Mr. McConnel Sanders for having indicated the kind of information that petroleum technologists are likely to be interested in and for the considerable help that he has given with information and advice. The lecturer also wishes to include the name of Mr. Donald Gill in this appreciation for having kindly assisted with information and for permission to quote his paper and use his bibliography. (*To be published later.*)

* FLIGHT, July 5, 1928, page 548.

AIRPORT NEWS

CROYDON

THE American Ice Hockey Team (the Massachusetts Rangers) flew from Croydon to Paris by Air Union on Tuesday, January 3, where they played against the French team. Other engagements will take them to Milan, Switzerland, Prague and Berlin before returning to London. Although up to the time of their departure from Croydon no definite arrangements for travelling on the Continent had been made, it is probable that the tour will be made by air.

When the Imperial Airways air liner arrived from Paris shortly before 3 o'clock on Tuesday afternoon of January 3, the last of the passengers to alight were Mr. and Mrs. J. A. Mollison, who were returning from their holiday in Switzerland. They were met by Kathleen Countess Drogheda. After facing the usual battery of cameras, they passed through Customs, etc., and then returned to the Tarmac to make a news reel film for Paramount, in which Mr. Mollison discusses his projected flight across the South Atlantic with his wife.

On Thursday, December 5, the first of Imperial Airways' new fleet of *Atlanta* monoplanes, which are to operate in Africa, left Croydon for Paris *en route* for Cape Town.

Mr. Bert Hinkler paid a short visit to the Aerodrome on Friday, arriving about 3 p.m. He left an hour later on a supposed flight to Hamble, where it was understood he was to leave at 2 a.m. for Australia. Later events, however, showed that he visited the private aerodrome at Feltham of the Fairey Aviation Co., and left there at 3 a.m. on his record flight attempt.

Following Mr. Hinkler's departure from Croydon on Friday, Lady Bailey's "Puss Moth" (G-AAYA) arrived from Stag Lane, piloted by Mr. de Havilland. He was joined later by Lady Bailey, who had made the journey to Croydon by road. Some time was spent in comparing weather reports from France, and as these were not very favourable, it was decided to wait for a later report at 9.30. In the meantime, the plane was fuelled and everything prepared in readiness for Lady Bailey's departure for Cape Town—she is hoping to beat Mrs. Mollison's record of 4 days 7 hours. After a further consultation following the next weather report, Lady Bailey decided to postpone her start until the next night. On Saturday there was a dense fog in France, and several of the air services to Paris were cancelled, and Lady Bailey was again compelled to postpone the start of her flight. At the time of writing the weather is not expected to improve for a day or two.

The total number of passengers who flew in and out of Croydon during 1932 was 70,162, compared with the total of 44,944 for the previous year. This showed an increase of over 25,000.

The total number of passengers for the week was 895; freight, 42 tons 11 cwt. HORATIUS.

FROM HESTON

CAPT. NEVILLE STACK joined the staff of Airwork, Ltd., on January 1, and it is understood his services are to be utilised on extensions of that firm's activities in the Near East. By kind permission of the Master of Sempill four "planettes" will visit Heston at lunch time on Sunday, January 15. This will be the first cross-country flight undertaken by these machines.

On Tuesday, January 3, Mon. Le Beau arrived from Berck in a Farman low-winged monoplane—"Gipsy III" engine. In a very gusty and high wind Mr. D. McKnight carried out his first solo flight after 6 hr. dual instruction.

Wednesday, January 4, Capt. Birkett was busily employed on taking photos of the burning French liner *Atlantique*. He had to circle around for just on 1 hr. before he located the ship. On the return journey to took only 1¼ hr. from the scene of the wreck to Heston, included in which was a landing at Portsmouth to drop one of his passengers.

Thursday, January 5, gave us an extremely busy morning arranging charters for Press representatives to visit the scene of the burning liner *Atlantique*. Airwork School of Flying sent two school machines (all that could be spared from instruction) and loaned a pilot for another company. Banco's had the Fokker and a "Puss Moth" on the job, Hillman's were off early from Heston with a "Fox Moth," while Capt. Birkett made two trips in his "Puss Moth" G-ABKG. Herr W. Hirth left for Brussels in his Hirth Klemm D.2121, while Mr. Tony Gibbons left for the same destination in his Pobjoy Klemm.

On Friday, January 6, Mon. G. Hanet arrived from Brussels in his "Puss Moth" with two passengers. We were pleased to welcome Maj. J. E. D. Shaw, who flew down from Yorkshire in his Avro "Cadet."

On Saturday, January 7, visiting machines during the day included nine "Moths," two "Avians" and one "Spartan." The clubhouse at Heston presented a real festive appearance in the evening, when a party numbering 111 assembled for the Staff Annual Dinner and Dance. Every credit is due to Miss Susan Slade, who organised the dinner and gathered together an outside staff of waiters, etc., so that the Club personnel could participate in the gathering. Mr. Nigel Norman, who presided, read a letter of good wishes from Mr. F. A. I. Muntz, absent on Airwork business in Egypt. In thanking the staff for the way they had suported him in the past, he gave a brief *résumé* of the growth of the company from its inception to the present day, outlined the future proposed extensions of Airwork activities, and expressed his confidence in their continued good backing. Mr. R. P. G. Denman proposed the toast of "The Chairman," which was accorded musical honours and loud cheers. Mr. J. Shand made the most "eloquent" speech of the evening when called on to respond for "those who owe money to Airwork." He rose solemnly to his feet, held his head with his left hand and raised his empty glass towards the Chairman with the other. This "action without words" was apparently, well understood by all present, as it met with loud laughter and cheers. Several other commendably short speeches were made by members of the different departments, after which all adjourned to the lounge where a most amazing conjuring show was given by Mr. Douglas Dexter. He is certainly no ordinary conjurer, and his rope trick and crystal gazing mystified everyone. After this a huge cracker was pulled, and when the assembly had adorned itself with the resplendent headdresses it contained and the coloured streamers strewn about the lounge, the fun became fast and furious. Dancing, with music supplied by Mr. Denman's Radiogram, went on continuously with a full complement of dancers, until midnight, when the party dispersed amid united expressions of goodwill and thanks from the staff to Airwork, Ltd., for such a wonderful evening's entertainment.

Doncaster Aerodrome

THE Air Ministry gives notice that Doncaster (Armthorpe) aerodrome is closed down, and in future no personnel or facilities will be available.

Aerodromes v. Coal Mines

NEWCASTLE Corporation are apparently finding great difficulty in obtaining a site for a municipal airport. The country round about is so honeycombed by mining operations that there is great danger of the surface sinking; in fact, several sites have been abandoned owing to the collapse of old workings. Mr. J. R. Brittain, the ground engineer of Cramlington Aircraft, Ltd., suggests that Newcastle confines its attentions to seaplanes and flying boats.

Hospital Air Pageant

THE British Hospitals Air Pageants have offered to hold an Air Pageant at the Hartlepools next summer, part of the proceeds from which to be allocated to local hospitals. The hospitals have gratefully accepted.

AIRISMS FROM THE FOUR WINDS

Duke of Gloucester Uses Aerial Transport

THE DUKE OF GLOUCESTER arrived at Khartoum on January 9 in a R.A.F. machine, having flown from Atbara, and on January 12 will fly south to Juba en route for a camp which has been prepared at Kiripi, 95 miles to the south-east.

Bad Luck for R.A.F. Cape Flight

ONCE again has the Service long-distance flight to the Cape been postponed, this time through illness, Flt. Lt. D. L. G. Bett, the second pilot, having been taken ill. Flt. Lt. G. E. Nicholetts has been detailed to fill the vacancy, but will need a certain amount of training, so the flight has been postponed ; the next period for the attempt will be between February 5 and 12.

Soviet Disarmament

A REPORT from Moscow via Copenhagen states that a Soviet airship, V.2, which left Moscow just before Christmas for Petrograd, was forced to make an emergency landing owing to strong winds and engine trouble. The necessary repairs having been done, the airship again continued its journey, but shortly after the restart the three engines again developed trouble (all at once?—must have received a letter from their union) ; the airship was driven by the wind to Novgorod and crashed into some trees, being completely wrecked, though the crew were saved. Later this report was denied by the Soviet official Tass Agency.

25 Years of " Flugsport "

As the first aeronautical weekly in the world, FLIGHT takes very particular pleasure in congratulating Herr Oscar Ursinus upon the completion of 25 years' uninterrupted publication of his very excellent fortnightly journal *Flugsport*, which he founded in 1908 and the destinies of which he has personally guided ever since. *Flugsport* has ever stood for dignity and truth in journalism. Fair comment, without fear or favour, has been the guiding principle of Herr Ursinus, and that may have accounted for the fact that *Flugsport* has never attained the size and *apparent* importance which much later journals have sometimes temporarily achieved. But these journals have come and, in not a few cases, gone. *Flugsport* survives, and " Papa Ursinus " continues the good work. When the war ended and the Allies imposed such severe restrictions upon power-driven flying that this practically came to a standstill, Oscar Ursinus took up with zest the advocacy of gliding, and not a little of the credit for the high state reached in Germany in the art and science of gliding is due to him. We hope that for many years to come Oscar Ursinus—a characteristic photo of whom is reproduced on this page—will continue the good work from his office on Bahnhofsplatz, Frankfurt a/M.

Flt. Lt. Atcherley in Air Collision

Two Service machines of 14 Squadron collided in the air on January 4 while flying in formation at Amman. Both machines landed safely, but AC. Stocks, passenger in one of the machines piloted by Flt. Lt. R. L. R. Atcherley, was killed in his endeavour to escape by parachute, which had not enough height in which to open effectively. Incidentally, it should be noted that passengers in Service aircraft must not jump unless told to do so by the pilot, and a pilot such as Atcherley would hardly give such instructions if he thought there was a reasonable chance of the machine being landed without undue danger to the occupants. Amman and the nearby country is over 2,000 ft. above sea level, the air being thin, necessitating a greater height for a parachute drop as a body falls more quickly. Otherwise no harm came to the occupants, Atcherley with his normal " luck " again coming out of it unscathed.

Game Hunter Rescued by Aircraft

FROM Nairobi comes a thrilling story which gives fresh proof of the utility of aircraft. A game hunter, Capt. Conyers Lang, having been attacked and gored by a buffalo, a native runner did a Marathon dash of 50 miles for help to the nearest town. Capt. Wheeler, of Wilson Airways, at once flew off in search of the wounded man, found him, and brought him back to hospital. Capt. Lang is badly injured, though his condition is reported to be not dangerous.

Gold Prospector Rescued by Air

IN FLIGHT of January 5 was reported a story of three airmen who forced landed in the wilds of Australia while searching for a gold reef. It is now reported that Whelan, who remained behind, has been rescued by the W.A. Airways pilot, Mr. Baker, after being marooned for a fortnight.

PIONEERS : On the left we have Herr Oscar Ursinus, founder of the German aeronautical journal *Flugsport*, which he founded in 1908. On the right we see Claude Grahame White, who made his first flight since 1921 on January 7 at Hanworth in one of the Lowe-Wylde " Babies." With him are Mrs. and Mr. J. A. Mollison, who also flew this slightly lighter plane.

CRAMLINGTON AIRCRAFT, LTD.

A REPORT from Cramlington Aircraft, Ltd., shows that interest in aviation is not on the wane up North, for the company have been more than usually busy of late. At the moment their hangar is so full that there is hardly room to walk about. Actually, very little of their recent work has been local, for several members of the Newcastle Aero Club have been compelled to give up keeping machines, and the Club itself has been very lucky in the matter of accidents. However, it is very gratifying to know that people from a distance prefer to send their machines to Cramlington, and it is felt that this is mainly due to Mr. Brittain, who must inspire confidence.

During the year much new equipment has been added, and electric light has been installed, which provides power for the dope shop fan, and the paint sprayer—the latter having been a great asset in speeding things up.

At the moment two "Puss Moths" are being modified, a "Moth" and an Avro are in for C. of A., while two crashed "Moths" are being repaired. Apart from these, a good many minor crashes have been repaired, seven machines have been in for C.'s of A., wings for reconditioning, modifications, and axles for conversion to take air wheels. The following machines have been worked upon, D.H.9, 53, 60, 60X, 60G, "Puss Moth" and "Fox Moth," Avro 504K, "Avian," Klemm, Spartan, Comper "Swift" and a Breda 15. The engine work has consisted of overhauls on "Gipsy I" and "Gipsy II" and "Cirrus," various modifications, 25-hr. schedules, top overhauls and repairs, in addition maintenance of the company's own machines (which incidentally were placed in all the summer races in which they took part). An endeavour is made to keep one spare job in hand, and after selling the Spartan, which was repaired in the spring, they built up, almost from a write-off, the D.H.60 "Moth," now in use, which led to another "Moth" being sent up from the South Coast. Another three-seater Spartan is waiting to be put together when work is not so strenuous. Work has also been done on a few cars and gliders, and some in the wireless line, of which the company is especially proud.

A corner of the Engine Shop.

Repairing a badly damaged fuselage.

Marshal of the Royal Air Force Sir John Salmond

IT has been stated in the Press that when Sir John Salmond retires from the position of Chief of the Air Staff on April 1 he will become a Government Director of Imperial Airways.

Purchase of Foreign Aircraft

THE Air Council have purchased, for experimental purposes, a Heinkel HE64 monoplane. It will be remembered that three of these extensively-slotted machines paid a visit to this country last September and gave a demonstration at Radlett aerodrome. A full description of the type was given in FLIGHT of September 9.

R.Ae.S. Lectures

THE following is a list of lectures as at present arranged for the second half of the Royal Aeronautical Society Programme for 1933. Lectures will be held in the theatre of the Royal Society of Arts, 18, John Street, Adelphi, London, W.C.2, at 6.30 p.m.

January 12.—"Airship Development Abroad." Squadron-Leader R. S. Booth, A.F.C., R.A.F.

January 26.—"Human Limits in Flying." Wing Commander G. S. Marshall, O.B.E., M.R.C.S., L.R.C.P.

February 2.—"The Operation of Aircraft over Tropical Routes." Mr. A. Plesman.

February 16.—"Cloud Formation." Sir Gilbert T. Walker, C.S.I., F.R.A.S., F.R.S.

March 9.—"Engine Cooling Research." Mr. R. McKinnon Wood, O.B.E., M.A., A.M.Inst.C.E., F.R.Ae.S.

March 23.—"Seaplane Research." Mr. H. M. Garner, M.A., F.R.Ae.S.

A date will be announced later for the postponed Lecture by Dr. Dornier on "Lessons of the Do.X," and also for a Lecture by M. Toupoleff on "Russian Aviation."

Visitors are admitted to any lecture on signing the Visitors' Book with their full name and address.

Aeronautical Exhibition at Selfridge's

WITH reference to the Aeronautical Exhibition now open at Selfridge's, we did not make it clear that Vickers Aviation are loaning a *model* of the Schneider Trophy machine—not the actual machine. Another exhibit has been added in the sectioned "Hermes II" engine which was one of the attractions at the last Paris Aero Show.

Air Pageant for Bournemouth

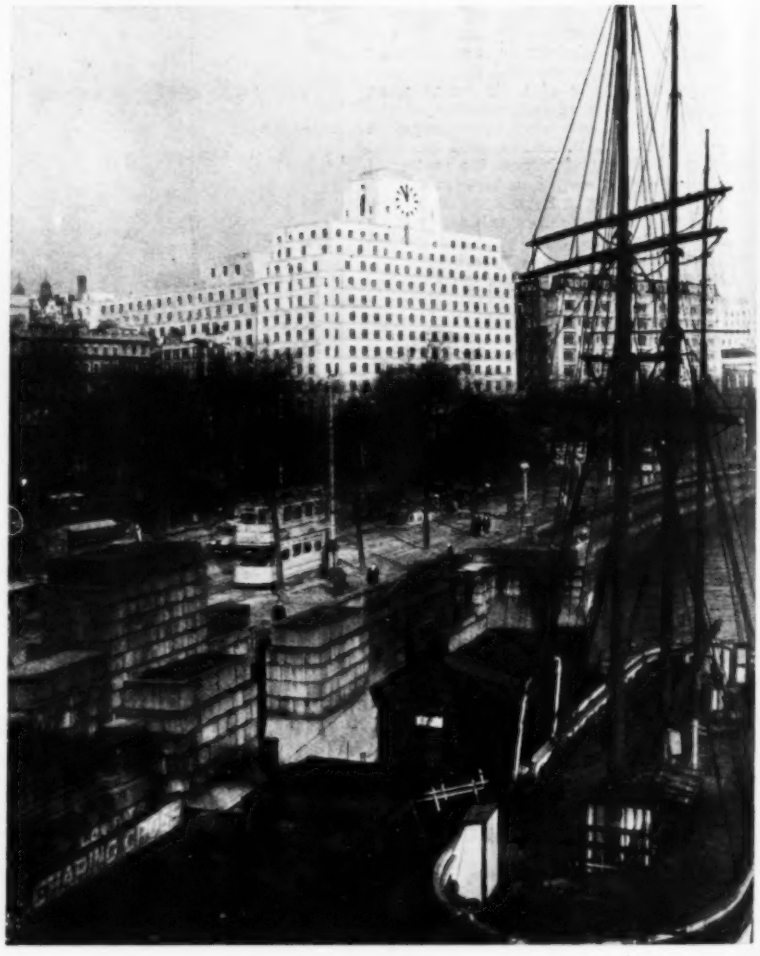
AT a meeting of Bournemouth's Town Council, the question of holding a great air pageant was discussed. It was reported that letters had been received from National Aviation Day, Ltd., asking for permission to use a field, and from the general manager of the British Hospitals Air Pageants. The Council deferred consideration pending the receipt of further information.

THE INDUSTRY

SHELL'S NEW "SHELL"

THE newest edifice to raise itself to prominence amidst London's architectural beauties is the magnificent block built on the site of the demolished Hotel Cecil to house that vast organisation Shell-Mex & B.P., Ltd. There is a sentimental interest in the fact that during the war the Hotel Cecil was the headquarters of the Air Ministry. The new building has a frontage of 200 ft. on the river side and rises to 300 ft. There are fifteen floors above the Embankment ground floors, which includes a fine clock tower. This Embankment block rises considerably higher than a central block, and the building is therefore seen to splendid effect from the Thames. There is a separate system of staircases and lifts for this block.

The clock in the tower has a special claim to attention. It is the largest in Great Britain. Its huge face carries hollow blocks of lead-antimony instead of numerals, and is 25 ft. across. The cardinal points of the dial are emphasised by a lozenge-shaped block larger than the remainder. There are no less than 1,400 windows in the new building, which are built up from standardised opening lights. The clock tower, a striking apex externally, is actually to serve the useful purpose of being the necessary plant house, for within it is contained on various stages the lift machinery, water tanks and ventilating fans, besides the large clock movement. It is, alone, 40 ft. in height. It is not irrelevant to mention in this brief description of the Shell building that anchoring in the Thames immediately below is the sailing vessel known as the *Friendship*, whose sponsors at one time encouraged aviation amongst the younger generation by acquiring a Blackburn "Bluebird" and providing the opportunity for initiating youngsters in the air.



The magnificent new building of Shell-Mex and B.P., Ltd., on the Thames Embankment, viewed from Hungerford Bridge. (FLIGHT *Photo.*)

The Netherlands Order "Kestrels"

THE Netherlands Government have placed an order with Rolls-Royce, Ltd., for a considerable number of their "Kestrel" 480-490-h.p. 12-cylinder Vee-type engine. These engines are to be installed in Fokker aircraft. In this foreign order we again have an indication of the desire of European countries to equip their Air Forces with the most up-to-date types of British aero engines, as well as aircraft. Belgium, Yugo-Slavia, Esthonia, Japan and Russia are other countries to which Rolls-Royce "Kestrel" engines have been supplied.

Dowty Wheels on the Kawasaki Fighter

THE Japanese single-seater fighter, Kawasaki K.D.5 (Kawasaki B.M.W. 600-h.p. engine) which was described and illustrated in FLIGHT, January 5, possesses an additional technical interest for our readers in the fact that it is fitted with Dowty internally sprung wheels, supplied by Aircraft Components, Ltd. The Kawasaki Company have purchased the Japanese rights in this design.

News from Zanzibar

MR. OSCAR GARDEN, one of numerous Dominion airmen who have achieved prominence with light aeroplane flights between Great Britain and Australia, is now, we learn from the Vacuum Oil Co., Ltd., having a successful time with his "Spartan" light aeroplane *Miss Mobiloil* in the mandated territories of East Africa. He went out to Dar-es-Salaam last October and started joyriding there shortly after. He then moved on to Zanzibar and took up over 200 people, chiefly Indians.

Parachute Escapes in 1932

IN 1932 the number of lives saved amongst Royal Air Force personnel by Irvin Parachutes was 18. This total compares with 29 in 1931, 22 in 1930 and 17 in 1929. Of the past year's total four escaped safely from one machine, which was a record of its kind. Two Fleet Air Arm officers figure in the 1932 list, owing their lives to the quick release harness which was specially designed for naval airmen, giving them the protection of a parachute which for several years had been denied them on account of the unsuitability of the standard R.A.F. type harness. The naval type of parachute provides for instantaneous release of the whole parachute equipment from the airman's body the moment he alights on the water.

THE ROYAL AIR FORCE

London Gazette, January 3, 1933

General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer :—M. W. S. Robinson (June 20, 1932) ; S. Keane (December 10, 1932) ; F. S. Gardner (December 12, 1932) ; E. B. Waddy (December 13, 1932) ; D. G. W. Somerville (December 15, 1932). F/O. H. R. A. Edwards is placed on half-pay list, Scale B, from December 24, 1932, to December 29, 1932, inclusive ; Flt.-Lt. A. H. Simmonds is placed on half-pay list, Scale A (December 26, 1932).

The follg. Flying Officers are transferred to Reserve (December 30, 1932) :—CLASS A.—H. Bailey, G. C. Butler, N. W. Creasy, W. R. Tope, R. C. Warner, L. E. A. Wright. CLASS C.—C. W. F. Carter.

Sqd.-Ldr. H. E. F. Wyncoll, O.B.E., M.C., is placed on retired list (December 29, 1932) ; F/O. D. H. A. Golege-Steel is dismissed the Service by sentence of General Court Martial (September 24, 1932).

Memoranda

The permission granted to R. W. R. Cartwright to retain the honorary rank of Sec. Lt. is withdrawn in consequence of his conviction by the Civil Power (December 17, 1932) ; No. 319708 Flt.-Cadet R. C. Calder is granted an honorary commn. as Sec. Lt. with effect from the date of demobilization.

ROYAL AIR FORCE RESERVE
RESERVE OF AIR FORCE OFFICERS

General Duties Branch

F/O. F. G. Fairhead is removed from the Service (December 24, 1932).

AUXILIARY AIR FORCE

General Duties Branch

No. 603 (CITY OF EDINBURGH) (BOMBER) SQUADRON.—The follg. Pilot Officers are promoted to the rank of Flying Officer :—Lord G. N. Douglas-Hamilton (December 30, 1932) ; P. Gifford (December 30, 1932).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Wing Commander R. H. G. Neville, O.B.E., M.C., to Station H.Q., North Weald, 17.12.32, to Command vice W/Cdr. R. G. D. Small.

Squadron Leaders : R. J. Sanceau, to Home Aircraft Depot, Henlow, 20.12.32, for Flying duties, vice S/Ldr. A. S. Maskell. D. V. Carnegie, A.F.C., to H.Q., Air Defence of Gt. Britain, Uxbridge, 17.12.32, for Air Staff duties vice S/Ldr. H. V. Drew, O.B.E., A.F.C. P. E. Maitland, A.F.C., to H.Q., Air Defence of Gt. Britain, Uxbridge, 17.12.32, for Navigation duties, vice S/Ldr. J. H. Dand, M.B.E., F. M. F. West, V.C., M.C., to School of Army Co-operation, Old Sarum, 27.12.32, for Administrative duties, vice S/Ldr. W. A. K. Dalzell.

Flight Lieutenants : A. M. Wray, M.C., D.F.C., A.F.C., to H.Q., Coastal Area, Lee-on-Solent, 13.12.32. E. C. de V. Lart to Station H.Q., North Weald, 14.12.32. J. R. Whitley, to Aircraft Park, Lahore, India, 10.12.32. G. V. T. Thomson, to No. 466 (F.T.P.) Flight, 13.12.32. C. P. Brown, D.F.C., to Air Ministry, Dept. of Chief of the Air Staff (Signals), 12.12.32. R. L. M. Barbour, D.F.C., A.F.C., to No. 29 (F) Sqdn., North Weald, 17.12.32. H. G. Brookman, to H.Q., Fighting Area, Uxbridge, 17.12.32. H. S. Broughall, M.C., D.F.C., to No. 1 Air Defence Group, H.Q., 17.12.32. J. A. Gray, D.F.C., to H.Q., Wessex Bombing Area, Andover, 17.12.32. E. F. Haylock, to H.Q., Coastal Area, Lee-on-Solent, 17.12.32. W. J. Seward, to No. 101 (B) Sqdn., Andover, 10.12.32. R. H. S. Spaight, to H.Q., Inland Area, Stanmore, 17.12.32. J. W. Bell, D.S.M., to Home Aircraft Depot, Henlow, 22.12.32. N. R. Buckle, to H.Q. Air Defence of Gt. Britain, Uxbridge, 5.12.32. F. H. D. Henwood, D.F.C., to Home Aircraft Depot, Henlow, 22.12.32. F. W. Moxham, to No. 32 (F) Sqdn., Biggin Hill, 23.12.32.

Flying Officers : W. R. Beaman, to R.A.F. College, Cranwell, 18.12.32. R. Chadwick, to R.A.F. Base, Calshot, 18.12.32. R. A. Chignell, to R.A.F. Base, Calshot, 18.12.32. R. B. Councell, to No. 3 Flying Training School, Grantham, 18.12.32. D. J. Eayrs, to No. 5 Flying Training School, Sealand, 18.12.32. H. E. Ellison, to No. 28 (A.C.) Sqdn., Ambala, India, 5.12.32. A. L. Franks, to R.A.F. College, Cranwell, 18.12.32. W. R. Hartwright to R.A.F. Training Base, Leuchars, 18.12.32. A. W. Hunt, to Central Flying School, Wittering, 18.12.32. R. C. Jonas, to R.A.F. College, Cranwell, 18.12.32. E. J. Laine, to R.A.F. College, Cranwell, 18.12.32. N. C. Odbert, to No. 504 (Co. of Notts.) (B) Sqdn., Hucknall, 18.12.32. H. M. Pearson, to No. 2 Flying Training School, Digby, 18.12.32. R. A. Sprague, to No. 2 Flying Training School, Digby, 18.12.32. V. C. F. Streatfeild, to No. 3 Flying Training School, Grantham, 18.12.32. P. W. M. Wright, to No. 5 Flying Training School, Sealand, 18.12.32. C. J. Hansford, to No. 13 (A.C.) Sqdn., Netheravon, 12.12.32. R. V. Bucknall, to No. 28 (A.C.) Sqdn., Ambala, India, 25.11.32. L. F. H. Orr, to Air Armament School, Eastchurch, 7.12.32.

Flying Officers : H. H. Chapman, to Station H.Q., Upavon, 29.12.32. W. V. L. Spendlove, to No. 401 (F.F.) Flight, 1.1.33.

Pilot Officers : G. E. Valentine, to No. 13 (A.C.) Sqdn., Netheravon, 19.12.32. E. R. Pearce, to No. 111 (F) Sqdn., Hornchurch, 19.12.32. J. J. Zwarenstein, to No. 7 (B) Sqdn., Worthy Down, 19.12.32. J. J. A. Sutton, to No. 33 (B) Sqdn., Bicester, 19.12.32. R. C. M. Collard, to No. 4 (A.C.) Sqdn., S. Farnborough, 19.12.32. W. R. Cox, to No. 101 (B) Sqdn., Andover, 19.12.32. F. W. Dixon-Wright, to No. 2 (A.C.), Sqdn., Manston, 19.12.32. P. I. Harris, to No. 35 (B) Sqdn., Bircham Newton, 19.12.32. W. P. Harvey, to No. 54 (F) Sqdn., Hornchurch, 19.12.32. T. F. U. Lang, to No. 16 (A.C. Sqdn., Old Sarum, 19.12.32. R. S. Ryan, to No. 33 (B) Sqdn., Bicester, 19.12.32. W. S. P. Simonds, to No. 4 (A.C.) Sqdn., S. Farnborough, 19.12.32. A. W. Sweeney, to No. 40 (B) Sqdn., Abingdon, 19.12.32. J. R. Talbot, to No. 18 (B) Sqdn., Upper Heyford, 19.12.32. A. P. S. Wills, to No. 13 (A.C.) Sqdn., Netheravon, 19.12.32. G. P. Woodhouse, to No. 13 (A.C.) Sqdn., 19.12.32. L. W. Oliver, to No. 2 (A.C.) Sqdn., Manston, 20.12.32. R. N. McKern, to No. 1 (F) Sqn., Tangmere, 28.12.32.

Acting Pilot Officer C. S. Byram, to No. 101 (B) Sqdn., Andover, 19.12.32.

Stores Branch

Flight Lieutenant : J. R. R. Harvey, M.M., to Air Ministry Dept., of A.M.S.R. (D. of E.), 25.12.32.

Flying Officer T. I. Iliff, to R.A.F. Depot, Uxbridge, 27.12.32.

Accountant Branch

Flight Lieutenant G. Goodall, to No. 5 Flying Training School, Sealand, 20.12.32.

Medical Branch

Group Captain W. Tyrrell, D.S.O., M.C., to H.Q., R.A.F., Middle East, Cairo, 14.11.32, for duty as Principal Med. Officer, vice W/Cdr. A. S. Glynn.

Flight Lieutenants : C. J. S. O'Malley, to Princess Mary's R.A.F. Hospital, Halton, 9.1.33. G. S. Strachan, to Aircraft Depot, India, Karachi, 9.11.32.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty :—

Lieut. (F/O., R.A.F.).—H. P. Madden to *Victory*, for School of Naval Co-operation, Lee-on-Solent, and for 443 Flight (Jan. 9).

Sub-Lieuts.—J. L. Hallewell and W. I. Lucas, attached R.A.F. (Jan. 15).

"The Sassoon Photographic Challenge Trophy"

A TROPHY, to be known as "The Sassoon Photographic Challenge Trophy," has been presented by the Right. Hon. Sir Philip A. G. D. Sassoon, Bart., G.B.E., C.M.G., M.P., Under-Secretary of State for Air. The trophy will be competed for annually under the following rules :—Any regular unit in the home commands normally carrying out air photography (except the School of Photography) is eligible to compete therefor. Where photography is carried out on a station basis, one entry only in the name of the station will be made. The competition will consist of the production of a type II mosaic of an area of country within a 30 miles radius of the unit's aerodrome to conform to certain conditions as notified annually. The following points will be taken into consideration in the marking :—Speed of production, 40 marks ; flying considerations (overlap, lines of flight, level, etc.), 30 marks ; mosaic, technical considerations (definition, colour, scale, titling, etc., of mosaic), 30 marks. Total, 100 marks.

The Royal Air Force Memorial Fund

THE usual meeting of the Grants Committee of the Fund was held at Iddesleigh House, on January 5. Mr. W. S. Field was in the chair, and the other members of the Committee present were : Air Commodore B. C. H. Drew, C.M.G., and Mrs. F. V. Holt. The Committee considered in all 23 cases and made grants to the amount of £489 15s. 9d.

Re-equipment of R.A.F. Units

THE following re-equipment of units has recently taken place :—

No. 10 (B) Squadron, Virginia from Hinaidi ; No. 56 (F) Squadron, Bulldog, from Siskin IIIA ; No. 460 Flight, IIIF., F.A.A., from Ripon ; No. 404 Flight, Nimrod and Osprey, from Flycatcher ; No. 402 Flight, Nimrod, from Flycatcher ; No. 407 Flight, Osprey, from Flycatcher ; No. 409 Flight, Nimrod and Osprey ; No. 405 Flight, Osprey (½ Flight only), from Flycatcher.

Re-equipment of the two undermentioned units has commenced :—No. 100 (B) Squadron, Vildebeeste, from Horsley T.B. ; No. 47 (B) Squadron, Gordon, from IIIF G.P.

The units below will be re-equipped as shown during the next few months :—R.A.F. College, Cranwell, Tutor, from 504N ; No. 501 (B) Squadron, Wallace, from Wapiti ; No. 601 (B) Squadron, Hart S.E.B. (D), from Wapiti ; No. 600 (B) Squadron ; Hart S.E.B. (D), from Wapiti ; No. 442 Flight, Seal, from IIIF, F.A.A. ; No. 449 Flight, Seal, from IIIF, F.A.A. ; R.A.F. Base, Calshot, Cloud, from Southampton.

Short Service Officers—Selection for Permanent Commissions (General Duties Branch) and Medium Service

OF the candidates who sat for the examination held in November, 1932, 26 officers reached the qualifying standard, those whose names are bracketed together obtaining equal marks. Specialisation vacancies will be allotted to the first 15. Subject to physical fitness, arrangements should be made for those marked "E" to join the Home Aircraft Depot, Henlow, for the specialist engineering course, commencing on August 10, 1933, those marked "S" the Electrical and Wireless School, Cranwell, for the specialist signals course commencing on April 24, 1933, and those marked "A" the Air Armament School for the specailist armament course commencing on February 28, 1933. The selection of Nos. 1, 7, 9 and 10, and of Flying Officers Canning and Gill, mentioned in (C) below, is subject to confirmation later, in view of the fact that they cannot complete 20 years' service by age 45. The officers named at (C) and (D) have been selected respectively for permanent commissions (other than as specialists) or for medium service. Instructions as to the posting of those who are to be trained as flying instructors will be issued later. A.Os.C. are to arrange for the officers named at (C) to be medically examined similarly to those referred to in para. 2. The selection of Flight-Lieutenants Carey, Fagan, and Pain, and of Flying Officer McMurtrie, is subject to the approval of the War Office. Flying Officer Bates will serve nine years with the Royal Air Force and on transfer to the Royal Australian Air Force on completing this period of service satisfactorily, will be eligible for a gratuity of £925 ; his present conditions of service will remain unchanged in other respects.

(A) EXAMINATION RESULT.—*Flying Officers.*—1, Pharazyn, W. F., "E" ; 2, Cauthery, R. P., "E" ; 3, Adams, H. G., "S" ; 4, Alexander, G. F., "E" ; 5, Candler, M. Q., "E" ; 6, Mynors, J. T., "E" ; 7, Bellairs, E. H., "S" ; 8, Matson, B. N., "E" ; 9, Messiter, H. L., "E" ; 10, Woodhouse, H. O., "E" ; 11, Baxter, J. N., "A" ; 12, Bearne, G., "A" ; 13, Hooper, L. M., "A" ; 14, Watson, M., "S" ; 15, Watson, A. C., "S"

(C) PERMANENT COMMISSIONS.—*Flying Officers.*—P. F. Canning, C. S. Gill, R. A. McMurtrie, M. V. Ridgeway, N. C. Singer.

(D) MEDIUM SERVICE.—*Flight Lieutenants.*—G. V. Carey, H. P. F. Fagan, F. J. F. Pain.

Flying Officers.—M. J. Adam, D. J. Alvey, W. N. H. Banks, E. C. Bates, N. V. Bertram, H. F. Chester, A. R. T. Coke, I. A. Critchley, L. A. Cubitt, R. C. Dawkins, G. F. Humphries, N. C. Hyde, G. B. Keily, K. D. Knocker, C. R. Lousada, A. N. Luxmoore, W. M. L. MacDonald, G. P. Marvin, C. E. Morse, J. S. Tanner, J. B. Tatnall, F. A. Wardell.

AIR POST STAMPS

By DOUGLAS ARMSTRONG

Air Stamps of 1932

Something like two hundred and fifty new stamps in exclusive use in the air post service were added to the world's total during the twelve months ending December 31, 1932. The number is approximately the same as in the previous year, and there have been few issues of a spectacular nature apart from the much criticised Do-X provisional of Newfoundland and the Von Gronau flying-boat stamps from the Philippines.

An event of some importance to aero-philatelists was the elevation to official status of the hitherto only semi-official air mail stamps of the Republic of Colombia, at first by means of a Government imprint upon the vignettes formerly provided by the Scadta concern, and subsequently in the form of a picturesque and finely produced series of national air mail stamps issued under official auspices.

Leonardo da Vinci and other pioneers of aerial flight have been well to the fore in connection with commemorative air stamps emanating from Italy, the Italian colonies and the Baltic State of Latvia. The annual flights of the airship *Graf Zeppelin* between Europe and South America have been responsible for special Zeppelin mail issues on the part of Argentina, Brazil and Paraguay.

A successful exhibition of air post stamps and souvenirs upon an international scale took place in Danzig at the end of July, when British exhibitors carried off most of the principal awards. A similar undertaking is mooted for London in 1934.

Stamps *versus* Covers

Many collectors are puzzled over the seemingly disproportionate prices that have been realised in the auction room of late by mint air post stamps as compared with those paid for "flown covers." Only the other day a fine "Hawker" cover, lacking only the "officially sealed" post office label was knocked down for a mere £125—considerably less than half what the unused stamp might have been expected to bring by itself. When it is considered that the "flown cover" is the recognised standard unit in aero philately, it certainly seems strange that the market in covers should be for the moment a trifle depressed. The true explanation is that the number of air post collectors pure and simple is small in comparison to the vast body of stamp collectors, and it is the latter who are forcing up the prices of mint air stamps by keen competition among themselves. On the other hand, the ordinary philatelist has little or no interest in first flights or any other exceptional covers, with the result that the demand for such items is much less.

There is no doubt, however, that the slump in the "cover" market is only temporary, brought about by world economic conditions, and there is every ground for the belief that a revival will set in within the next year or two. On this presumption, now is obviously a favourable time for astute aero collectors to buy, whilst prices are relatively low against the time when America, the home of aero philately, once more becomes a serious buyer and raids the London market for her supplies of the more desirable "flown covers."

Latest Issues

Following the emergency surcharge of 2½ piastres applied to the old 2 pi. air mail stamp on July 22 last, a stamp of this denomination was incorporated in the permanent air stamp series of the Sudan as from January 1, 1933, together with one of 3 milliemes face value.

China has just taken into use a new and striking set of air mail stamps in an improved version of the *motif* depicting an aeroplane passing over the Great Wall. The scene is presented from a different angle and the former Handley-Page machine has given place to one of a more up-to-date pattern. The values and colours of the stamps remain unchanged, viz., 15 cents blue-green, 30 cents scarlet, 45 c. purple, 60 c. blue and 90 c. olive.

From the Republic of Salvador (Central America) comes a set of four particular air post stamps commemorating the centenary of the death of the patriot-priest Don Jose Matias Delgado, known as the Father of His Country. Executed in large upright format, they bear a portrait of the Padre, flanked by wings and dated "1832-1932." The issue, which is a restricted one, was put on sale on November 12, 1932, and comprises 15 centavos red and violet, 20 c. green and violet, 25 c. purple and red and 40 c. blue and green.

Two new stamps from Roumania denoting an obligatory tax upon correspondence in aid of the national aviation fund present the head of an airman above the inscription "Timbrul Aviatiei," reproduced by the photogravure process, in denominations 1 Leu red-brown and 2 Lei ultramarine respectively.

Rocket Post Stamps

Special stamps for use on letters despatched by rocket post constitute the latest novelty for aero philatelists to add to their collections. A series of three values was created in connection with the experiments carried out by Herrn. K. Weisz at Kumberg, Austria, last summer. They are printed in impressionist designs showing rockets flying through the ether and duly inscribed "Raketen Flug-Post in Oesterreich," comprising 3 groschen red, 10 gr. yellow and 1 Schilling blue respectively.

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A New Company

UNIVERSAL AIRCRAFT SERVICES, LTD., is a new company operating from Witney Aerodrome, near Oxford, with the object of covering the usual services of overhauling and the maintenance of aircraft, aerial photography and general hire work, joyriding in all parts of the country during the season, and also offering to the public newly erected and reconditioned aircraft of various types carrying twelve months' C. of A. at prices ranging from £100 to £300. These low prices are obviously arranged to attract the custom of buyers of moderate means. We also understand that the company is now in a position to accept a limited number of apprentices for training as ground engineers, and, if suitable, as pilots too. The directors of the company, whose London address is 6, Broad Street Place, E.C.2, are Mr. D. L. Townsend and Mr. H. B. G. Michelmore.

Rexine

As a material originally designed to substitute leather, Rexine has developed a technique and beauty of its own, consequently its usefulness is now extensive, ranging from interior and exterior bodywork in cars and passenger transport generally to household purposes like wall decoration and furniture. A wide range of qualities, designs and colours are now produced, and their application is described in a booklet issued by Imperial Chemical Industries, Ltd. Inquiries should be addressed to their subsidiary company I.C.I. (Rexine), Ltd., Hyde, Cheshire.

Mr. William Courtenay

MR. AND MRS. J. A. MOLLISON have each appointed William Courtenay to look after the affairs of their future flights and other plans during 1933. Mr. Courtenay will, of course, continue to control his aviation business and will be organising three or four air displays this year. Mr. Courtenay looked after Miss Amy Johnson, as she then was, during her *Daily Mail* air tour in 1930. In 1931 he undertook similar duties for that paper with Mr. Mollison's tour and was responsible for the work connected with Mrs. Mollison's record return Cape flight.

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The Nickel Bulletin. December, 1932. Vol. 5, No. 12. The Mond Nickel Co., Ltd., Thames House, Millbank, London, S.W.1.

Aeronautical Research Committee Reports and Memoranda: No. 1479. *Wheels, Fairings and Mudguards.* By F. B. Bradfield and G. P. Midwood. March, 1932. Price 1s. net. No. 1485. *Radial Engine Tested at Reduced Mixture Strength and with Variable Ignition Timing.* By J. Swan and A. W. Morley. September, 1931. Price 9d. net. No. 1489. *Lift and Drag Measured in a Velocity Gradient.* By F. B. Bradfield and J. Cohen. June, 1932. Price 4d. net. London: H.M. Stationery Office, W.C.2.

Employment Map of England and Wales. Mills & Rockleys, Ltd., Wollaton Street, Nottingham.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors.

(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published January 12, 1933.

22,276. D. MILLER. Driving-mechanism for model aeroplanes. (385,012.)
31,246. FAIREY AVIATION CO., LTD., M. J. O. LOBELLE. Variable-pitch propellers. (385,074.)
33,992. B. NAGLER and R. HAFNER. Helicopter aircraft. (385,101.)